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Berkeley Master Plan

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B E R K E L E Y M A S T E R P L A N

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City Planning

Berkeley

BERKELEY PLANNING COMMISSION

Berkeley, California
July 31, 1976

Taylor Culver, President

Arnold Cohn, Vice President

Robert Holtzapple

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Sara Ishikawa

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Paul Maier

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I_N_T_R_O_D_U_C_T_I_O_N_

A. INTRODUCTION

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BERKELEY MASTER PLAN

INTRODUCTION

Setting, Growth and Development

Berkeley is located at the geographic center of the Bay Area. Like its neighbors to the north and south, its western limits are defined by the Bay and its eastern limits by the abruptly rising Berkeley Hills. Its climate is mild; prevailing winds are from the west and southwest.

The character of Berkeley's urban development has its roots in concurrent events during the last half of the 19th century. Establishment of the University of California and dedication of the site for the School for the Deaf led to the physical development of its eastern foothills and its social development as a cultural and educational center. Development of the railroads from Oakland, first to Martinez and later to Sacramento, led to industrial and residential development in West Berkeley, then known as Oceanview.

The first major growth decade was 1900-1910, when the population increased from 10,000 to 40,000. Trolley service to Oakland and ferry service to San Francisco were initiated at this time. When the earthquake and fire of 1906 drove many to the East Bay, Berkeley experienced unprecedented residential growth. The 1920's saw another spurt of residential growth. In spite of the 1923 fire which destroyed 600 buildings and left 4,000 persons homeless, the population grew from 56,000 in 1920 to 82,000 in 1930.

The final population growth in Berkeley occurred during and after World War II. The war attracted large numbers of war workers. Berkeley's black population quadrupled while its student population fell from 17,000 in 1940 to 11,000 in 1945. This change from a middle class University city to a highly diverse city accommodating a wide variety of races, economic levels and lifestyles has been permanent and characterizes Berkeley's population today.

Setting, Growth and Development, Con'd

From 1945-1950, the University doubled in student population. Enrollment however, dropped back to 13,000 by 1953. The University has since grown to almost 30,000 students. Since 1950, Berkeley's diverse population has produced a climate in which concern for its people and the courage to innovate result in unique policies and programs.

Berkeley's 1955 Master Plan set a comprehensive framework for the future. The program of the early 1960's to rezone many lower income neighborhoods to more restrictive classifications was almost unprecedented. Neighborhood planning in the San Pablo neighborhood led to Berkeley's first traffic diverters. The program was characterized by cooperation between residents and the City in planning and implementing programs to upgrade a low income black neighborhood. The Federally Assisted Code Enforcement Program used to help residents improve their homes was the largest such single program ever completed.

In 1966, Berkeley voted to underground all of the Bay Area Rapid Transit line in Berkeley, becoming the only community in the system to take on indebtedness above that for the system as a whole. A major issue in this bond election was the fear that elevated tracks would split the community socially, economically and racially. This same concern led to voluntary integration of its entire school system in 1968.

Despite its limited financial capacity, Berkeley has sought to meet the diverse needs of its population. It has remained one of only a handful of California communities to provide a wide spectrum of health services to residents. Its commitment to quality public education is unequalled. With city programs, grants and contracts to community agencies, a wide variety of social, recreational and cultural activities for and by residents are supported.

Setting, Growth and Development, Con'd

1 Low and moderate income families, elderly and disabled persons benefit from
2 its non-profit moderate income housing and its leased housing program for
3 low income families.

4 Berkeley residents care about their neighborhoods and their community.
5 Thousands participate in the city's decision-making every year as members
6 of neighborhood organizations, political groups backing candidates and
7 initiatives, appointed boards and commissions and as individuals.

8 Paralleling concern for its citizens has been concern in Berkeley for
9 its environment. Berkeleyans formed the nucleus of the Save the Bay
10 Association which successfully fought the uncontrolled filling of San
11 Francisco Bay for residential and industrial development.

12 Recognizing the environmental threat of automobiles, Berkeley resisted
13 the development of an Ashby Avenue freeway, established a policy of reducing
14 dependence on the automobile, installed a system of bikeways, developed a
15 traffic management plan to protect the environment of residential areas and
16 initiated programs to improve transit service. Regionally, it is actively
17 participating in planning for alternative solid waste management systems
18 and regional open space.

Population

19
20 Berkeley has perhaps the most diverse population to be found in any
21 city of its size. Persons of all ages, races, incomes and lifestyles
22 are found among its population. While the size of the population (approx-
23 imately 115,000) has not changed in the last quarter century, shifts in
24 its makeup are going on all the time. The 50's and 60's saw a large in-
25 crease in the student and young adult population. Between 1960 and 1970
26

Population, Con'd

1 the number of persons between 15 and 24 increased 50% while the number of
2 persons under five declined almost 30% and the number 35 to 64 declined
3 almost 20%. Households with children were replaced by those without
4 children. While the total white population declined slightly, the black
5 population increased by 25% and the other non-white population (primarily
6 Chinese and Japanese) increased almost 40%. Women, low income households,
7 ethnic and racial groups, the disabled and unconventional lifestyles
8 asserted themselves more than ever before. Alternative education, child
9 care programs and senior centers were among the responses to this increased
10 awareness. The impact of physical development (apartments, parks, urban
11 renewal, street beautification, recreation centers) on the social fabric
12 of the city is being examined. The integration of social and economic with
13 physical planning recognizes the inter-relationship between what is
14 developed or conserved and the quality of life and character of the popula-
15 tion in Berkeley.

Economy

17 The University of California is the single largest factor in Berkeley's
18 economy. It provides approximately 12,000 jobs and its departments, staff,
19 faculty, students and visitors spend millions of dollars annually in Berkeley.
20 Other significant components of the economy include the industrial develop-
21 ment in West Berkeley, the Central Business District, community and neighbor-
22 hood commercial centers and other institutions such as the hospitals and
23 Graduate Theological Union.

Economy, Con'd

1 In spite of institutional expansion and increased sales by specialty
2 shops in many areas, Berkeley's economy has deteriorated over the past
3 several years. Unemployment is over 16%; among blacks it is estimated at
4 over 20%. Since 1970, in constant dollars, sales tax receipts have declined
5 7%, real estate property values have declined 9% and city expenditures have
6 risen more than 12%. In addition, the University of California and other
7 non-profit institutions take a large portion of the land in the city off
8 the tax rolls, creating a greater burden on property owners and residents.

9
10 THE MASTER PLAN

11 The purpose of the Master Plan is to guide public and private decisions
12 affecting Berkeley's development and character. The Plan expresses Ber-
13 keley's current policies for future development, both short and long range.
14 The City Council is a primary user of the Plan since its decisions will both
15 directly implement Plan proposals and will provide the framework for others
16 to act in accordance with the Plan through regulatory devices and other
17 programs.

18 Berkeley's first comprehensive Master Plan was adopted in 1955. A
19 landmark in its time, it still provides a standard for Master Plans focused
20 on traditional physical development issues. Since then, Berkeley has parti-
21 cipated in the regional General Plan as well as plans for San Francisco Bay,
22 transportation, open space and housing. The state has broadened the horizons
23 of local planning by requiring the integration into General Plans of policies
24 on housing, natural hazards and environmental protection. While not mandated
25 by state law, some jurisdictions are further expanding their plans to include
26 social and economic development goals as well as other subjects of local
27 interest.

THE MASTER PLAN, Con'd

While Berkeley's 1955 Master Plan has been amended many times--most recently in 1968--it still does not include all the elements mandated by State Law. Although the flexibility of the existing Plan has allowed actions to make zoning more restrictive and to experiment in traffic management, the basic thrust of its policies do not accurately address the attitudes and problems of Berkeley in the 1970's. Wide citizen concern about the issues and policies affecting land use and density led to enacting the Neighborhood Preservation Ordinance which mandated a comprehensive revision of the Master Plan and Zoning Ordinance. A Master Plan Revision Committee was appointed by the City Council to assist the Planning Commission with the task of Plan and Ordinance revision. The Committee's Master Plan proposals were submitted to the Planning Commission in January 1976. After review, amendment and public hearings this Plan was adopted by the Planning Commission on _____ and by the City Council on _____. The Planning Commission will be developing Social and Economic Development Elements. These will be integrated into the Master Plan in the near future. In the coming years, other revisions will be made as appropriate to maintain the currency and utility of the Plan policies and proposals.

The Plan is a "today" Plan--indicating the current intent of the city. Some components such as the Goals define ideals toward which the city will be constantly striving but which be may never/attained. Other proposals may be realized and they can be changed from a proposal to a reality, such as a park development. Others are policies which are intended to define how other activities are undertaken. These will be reviewed periodically as to their usefulness and validity and updated as needed.

ASSUMPTIONS

General

- 1) The San Francisco Bay Region* still rich in natural and scenic resources, will choose to protect and conserve those environmental qualities and will take decisive actions toward protecting and enhancing the quality of its land, air and water resources.
- 2) The region's population is expected to increase from 4.6 million in 1970 to 5.8 million in 1990, but almost no population growth will occur in central cities such as San Francisco, Oakland and Berkeley. These cities will, however, experience increases in employment.
- 3) Berkeley will continue to occupy a key position in the region, functionally as a world renowned educational center and geographically due to its proximity to Oakland, San Francisco and the Bay. Berkeley will continue to coordinate with state and regional agencies responsible for areawide planning of social services, transportation, public facilities, open space and environmental protection.

Berkeley

- 1) The size of Berkeley's population will not change; its makeup will be characterized over the next twenty years by: 1) racial, ethnic and economic diversity; 2) a high proportion of young adults including many non-students; 3) more but smaller-sized households and families; and 4) fewer low income households.

* Alameda, Contra Costa, Marin, Napa, San Mateo, Santa Clara, San Francisco, Solano and Sonoma Counties.

Berkeley, Con'd

- 1 2) The University of California will continue its role as a center
2 of higher education and cultural activities. Its enrollment will
3 stay at approximately 27,500.
- 4 3) Financial assistance from state and federal sources will in-
5 creasingly be in the form of block grants which permit a
6 greater degree of local discretion in their use than categorical
7 grants for specific projects. This will be accompanied by
8 requirements for systematic general and program planning at the
9 local level to obtain the greatest benefit from these limited
10 resources.
- 11 4) Its central location, attractive neighborhoods, growing number
12 of households and limited opportunities for new development will
13 result in a continued high demand for housing of all types in
14 Berkeley.
- 15 5) Commercial, residential and institutional activities will con-
16 tinue to use and improve existing structures where feasible.
17 Deteriorated buildings and incompatible uses will be replaced.

GOALS

- 20 1) To preserve the unique character of Berkeley which results from
21 its extra-ordinary natural and man-made amenities, and from
22 its diverse population made up of persons of all ages and a
23 wide variety of economic levels, racial and ethnic groups and
24 lifestyles.

GOALS, Con'd

- 1 2) To enable all residents to obtain decent housing, suitable employ-
2 ment, public services, recreational and cultural facilities
3 and essential personal goods and services.
- 4 3) To preserve Berkeley's traditional regional roles as a fine
5 residential community and as an educational, cultural, pro-
6 fessional and recreational center of the Bay Area.
- 7 4) To make local government open, accessible and responsive to
8 the needs of all Berkeley citizens.
- 9 5) To improve Berkeley's financial position by fostering oppor-
10 tunities for appropriate economic development.

Berkeley's Character

15 Berkeley's residents have always had a deep attachment to the physi-
16 cal character of the city. Although taking different forms of expression
17 over the years, the recognition of Berkeley's beauty, geographic advan-
18 tages and its physical setting have almost continuously affected the view-
19 points of its temporary and permanent citizens. In recent years, the
20 attachment to its physical character has been accompanied by a commitment
21 to the idea of racial, cultural and economic diversity among Berkeley resi-
22 dents and by a recognition that this diversity is a valued aspect of Ber-
23 keley's character. Policies to control the scale and location of new
24 development, to preserve open space, to mitigate the effects of automobiles
25 and to strengthen citizen participation are included in the Plan to clarify
26 the inter-relationship of citizen participation, the economy and the character
27 of the city.

Increased Citizen Participation

1 Residents and organizations are demanding more direct access to the
2 planning and decision-making process. The Plan addresses the need to
3 impart information to citizens and to develop and maintain effective ways
4 for citizens and organizations to participate in policy decisions on land
5 use controls and environmental and social issues.

Emphasis on People

6
7
8 The 1955 Master Plan dealt with people in a quantitative manner, as users
9 of physical development. The revised Plan more explicitly derives from
10 the needs of people -- for jobs, housing, open space, safety from natural
11 hazards and participation in a rich cultural and community experience.
12 The needs of the elderly are not the same as the needs of families; the
13 needs of low income households are not the same as the needs of the more
14 affluent. The Plan responds to this spectrum of needs to the greatest
15 degree possible.

Environmental Awareness and Protection

16
17
18 Since 1955, awareness and understanding of environmental hazards, the
19 potential polluting effects of human activities and consequences of
20 ecological disturbance have greatly increased. The state's requirements
21 for Plan elements on Noise, Conservation, Open Space, Seismic Safety and
22 Safety reflect this concern. Berkeley has been a leader in restricting
23 bay fill, supporting recycling and preserving environmental quality in
24 its neighborhoods. The Plan formalizes, extends and coordinates such
25 policies and proposals.

LAND USE ELEMENT

B

B. LAND USE ELEMENT

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THE UNIVERSITY OF CHICAGO

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I. INTRODUCTION

PHYSICAL CHARACTER OF THE COMMUNITY

1 Though it is perceived by each person differently, concern over the pre-
2 servation of the "character of Berkeley" is expressed by all segments of the
3 population. This distinctive character results from Berkeley's unparalleled
4 natural setting, from the presence of the University of California campus,
5 its diversified life styles. Yet, Berkeley represents an intricate and
6 delicate balance that is constantly undergoing subtle changes in its phy-
7 sical and social fabric. A continuing need exists to maintain, improve,
8 adapt and, where necessary, replace existing development to meet changing
9 circumstances. The Land Use Element recognizes the interdependence of
10 residential neighborhoods, commercial centers, employment centers and the
11 University of California. Its proposals are intended to insure that future
12 development reinforces, rather than undermines this mosaic of community
13 values.

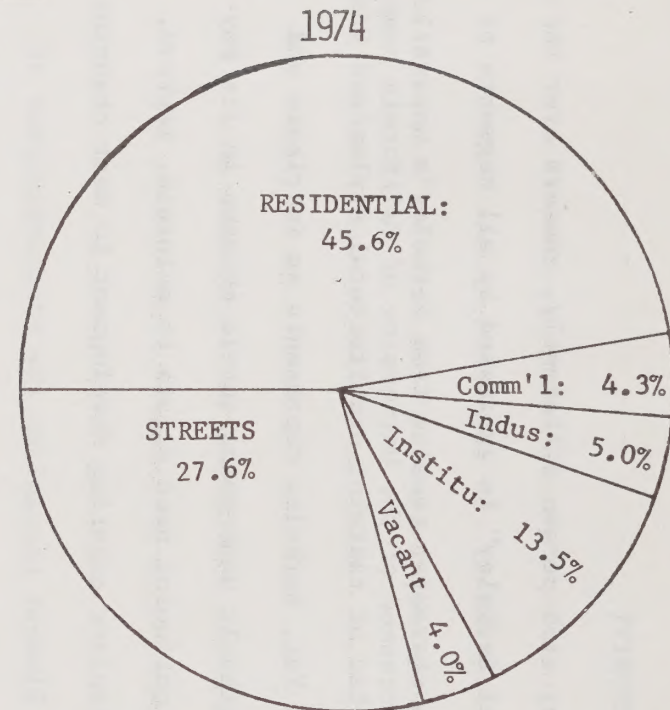
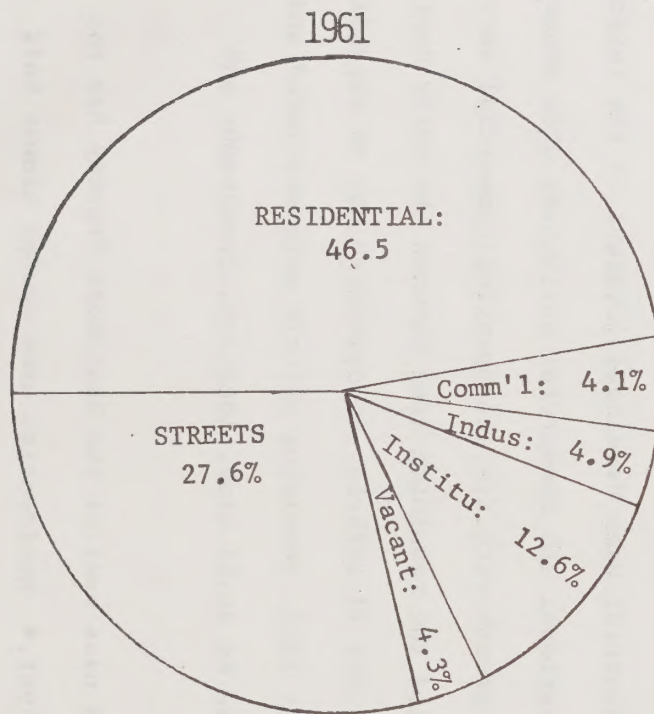
14 The basic land use pattern of Berkeley was established by the early
15 1900's. In West Berkeley, industrial uses developed adjacent to the railroad
16 and San Pablo Avenue. Institutional and commercial activities grew around
17 the University. Residential growth with its accompanying commercial services
18 and public facilities, occupied the remaining land between the early centers
19 of development. Before World War II Berkeley accommodated new or expanding
20 activities on vacant land. By 1950, remaining parcels were scattered and
21 limited in their potential use by small size, location, topography and
22 adjacent development.

23 The distribution of land uses west of the Eastshore Freeway has not
24 changed significantly since 1961.* Residential uses occupy almost half

25 -----
26 * See Attached Chart

CITY OF BERKELEY

LAND USE DISTRIBUTION



<u>LAND USE</u>	<u>1961 ACRES</u>	<u>% CHANGE</u>	<u>1974 ACRES</u>
Residential	3023	-2.0	2964
Commercial	267	+5.2	281
Industrial	318	+2.8	327
Public Institution	819	+7.2	878
Vacant	280	-8.2	257
Streets	1796	----	1796
TOTAL	6503		6503

INTRODUCTION

PHYSICAL CHARACTER OF THE COMMUNITY, Cont'd

1 of all available land. The streets occupy more than one-quarter. Public and
2 institutional uses occupy half of the remaining land. The University
3 occupies one half of the public land use with almost 400 acres. Other large
4 public sites are Aquatic Park (almost 100 acres) and the State School for
5 the Deaf and Blind (almost 50 acres). Schools, parks, churches, public
6 facilities and hospitals occupy the remaining public and institutional land.
7 Industrial and commercial developments occupy slightly over 600 acres with
8 the largest concentrations in West Berkeley and the Central Business
9 District.

10 The Land Use Element retains this distribution with only minor modifi-
11 cations to clear up existing land use conflicts and to encourage needed
12 residential, commercial and industrial activity. The population of
13 Berkeley has ranged between 110, 000 and 115,000 since 1950. The land use
14 policies are designed to retain this population.

CITIZEN PARTICIPATION

17 As more and more Berkeleyans are affected by changes which have occurred
18 or are proposed, they increasingly demand a more direct voice in the decision-
19 making process. The number of official boards and commissions, neighborhood
20 associations and community groups has increased greatly over the last ten
21 years.

22 While there is broad community support for citizen participation, rea-
23 lization of this objective is difficult to achieve. Among the impediments
24 perceived by citizens are inadequate information on planning issues and pro-
25 posals, inadequate control over land use decisions and the often long and
26

INTRODUCTION

CITIZEN PARTICIPATION , Cont'd

1 and complicated process of plan development and implementation. The adequacy
2 of a planning process is difficult to measure. Is lack of reaction agree-
3 ment or ignorance? Is complaint with the process or its conclusions?
4 Which decisions can be based primarily upon neighborhood wishes and which
5 have broader implications? How can the rights of those being regulated be
6 assured? The Plan's policies address these issues and recommend citizen
7 participation processes that will result in land use decisions sensitive to
8 all concerns of the community.

THE LAND USE ELEMENT

11 Based upon the overall goal of the Master Plan, the land use policies
12 provide general direction for and constraints upon planning and physical
13 development in Berkeley. The policies are first defined on a city-wide
14 basis; these are followed by policies appropriate to special concerns. The
15 planned distribution of various kinds and intensities of land use is ex-
16 pressed graphically on the Land Use Plan Map. The Map does not portray
17 the specific use of each parcel of land. Rather, it shows the planned
18 locations of generalized activities and residential densities. The policies
19 and Land Use Plan Map are corrolary and complementary.

II. ISSUES

RESIDENTIAL AREAS

1 Berkeley's residential areas reveal its historical development. Cen-
2 tury old Victorian homes are still found in west and central Berkeley, the
3 areas of earliest residential development. The first quarter of the 20th
4 century brought the brown shingled homes identified with Berkeley and the
5 extraordinary architecture of Julia Morgan and Bernard Maybeck. In the
6 level area, the need for inexpensive but adequate housing inspired a
7 variety of residential types--small scale duplexes and triplexes, spanish
8 style cottages and ranch homes. As demand for housing outstripped avail-
9 able vacant land, more intensive development of apartments began, first
10 around the campus and later in other convenient and buildable locations.
11 The hill areas continue to develop in a variety of residential styles,
12 many highly innovative.

13 Appropriate densities for Berkeley neighborhoods and the zoning to
14 achieve these densities have been in the forefront of Berkeley planning
15 since the adoption of the 1955 Master Plan. Extensive apartment develop-
16 ment during the 1960's led to "downzoning" of many neighborhoods and
17 ordinance revisions in 1973 reduced the intensity of development permitted
18 in the remaining apartment zones. Many persons believe that the high
19 density zones have been "overbuilt," contributing to traffic congestion,
20 inadequate public parks and facilities and a high crime rate. With limi-
21 tations on new development, however, the demand for existing housing pro-
22 duces high prices, sometimes inadequate maintenance and reduced vacancies.

23 The increase in overall housing demand of recent years coincides with
24 the increase in the young adult population and a period of experimentation
25 in living arrangements. Separately or in combination, these changes have
26

ISSUES

RESIDENTIAL AREAS, Cont'd

1 affected many of Berkeley's traditional family neighborhoods. Small "boot-
2 leg" apartments in single-family homes find a ready market among those
3 persons wanting relatively inexpensive housing with the privacy and physical
4 amenity of a low density neighborhood. Communal living arrangements
5 have attracted people for similar reasons but with more discordant results.
6 Such uses occur frequently enough to create perceptible change in neigh-
7 borhood character in terms of increased traffic, diminution of the parking
8 supply, poor maintenance and lack of consideration for neighbors.

9 Over 13,000 elderly persons live in Berkeley. One result of the
10 significant proportion of elderly in the population is the appearance of
11 specialized extended care facilities in several of Berkeley's traditional
12 family neighborhoods. Such facilities are needed to serve the population
13 but criteria for their location in the City's neighborhoods need refinement.
14 The Plan policies address these problems and provide a context for making
15 decisions about their location.

COMMERCIAL AREAS

16
17
18 Commercial areas occupy a relatively small amount of land when compared
19 to their importance to the City's economy. Berkeley's commercial areas grew
20 along its street car routes and near centers of employment and the Univer-
21 sity. Over time, they have adapted to increased use of automobiles and
22 changing demands for goods and services. Shattuck Avenue downtown and at
23 Vine; University Avenue; Telegraph Avenue south of the Campus; and Alcatraz
24 at Adeline have been reconstructed to improve their amenity and efficiency as
25 commercial areas. San Pablo Avenue is presently being reconstructed.

ISSUES

COMMERCIAL AREAS, Cont'd

1 Even with these improvements, Berkeley's retail sales are not increasing
2 when the effect of inflation is removed. Automobile sales, home furnishing
3 and general merchandise have shown declines; eating and drinking, specialty
4 shops and drug sales continue strong. An increasing share of Berkeley's
5 retail sales are to persons living outside the City who come here for
6 shopping, working or entertainment.

7 Effects of this change in the character of retail sales are felt in
8 many Berkeley retail centers. In community commercial centers, cars are
9 parking in adjacent residential areas. Residents must travel further to
10 find businesses serving their day to day needs such as hardware and grocery
11 stores, adding further to traffic congestions.

12 On the other hand, commercial areas that have not reached this regional
13 market have declined. Some commercial locations are vacant, underutilized
14 or physically deteriorated. Revitalization of commercial uses and the re-
15 placement of excess commercial development with suitable housing and open
16 space is needed. The Land Use Element deals with these problems by en-
17 couraging appropriate and compatible groupings of commercial establishments
18 through land use controls and economic development activities.

19
20 INDUSTRIAL AREAS

21 The industrial zone is located in an arc around the West Berkeley resi-
22 dential area between the Eastshore Freeway and San Pablo Avenue. Its loca-
23 tion near the center of the region and close to freeway and rail transpor-
24 tation make it attractive for many types of industry. Those areas near the
25 residential area are controlled in their development and activities to insure
26

ISSUES

INDUSTRIAL AREAS, Cont'd

1 compatibility with the adjacent neighborhood. The Berkeley Redevelopment
2 Agency is presently implementing an industrial park project in the area
3 bounded by University Avenue, Sixth Street, Cedar and the Eastshore Free-
4 way. Several businesses have developed or expanded their operations
5 under this plan. Issues relating to the planned removal of all existing
6 housing in the redevelopment area have not yet been completely worked out.

7 Scattered industrial concerns exist in residential areas, primarily
8 along the Santa Fe Tracks and in the Central District. The Plan policies
9 call for the relocation of these to industrial sites and their redevelop-
10 ment to appropriate residential or commercial uses.

11 A number of problems, however, retard the development and improvement
12 of the industrial area: Many of the vacant and underused parcels are small
13 by current standards; some existing development is deteriorating; some
14 streets and utilities need improvement: High taxes are a further deterrent.

15 Industrial uses generally provide more in property taxes than they
16 cost the City in service. Except for the industrial park, however, the City
17 has not actively solicited new industry in spite of its persistent high
18 unemployment and the large amount of land off the tax rolls. The Plan
19 policies encourage the further development of the industrial area to
20 improve the City's tax base and the relocation of industries conflicting with
21 residential neighborhoods.

UNIVERSITY OF CALIFORNIA

22
23
24 Since its earliest days, the University has been a major factor in
25 the physical, social and economic development of Berkeley. The University
26

INDUSTRIAL AREAS, Cont'd

1 provides a wide range of cultural opportunities not available in most cities
2 the size of Berkeley and is a major contributor of the economic health of
3 the City.

4 The University's growth over the past twenty years, however, has
5 proved difficult for Berkeley to successfully accommodate. The increased
6 commercial and institutional activity related to the University brought
7 significant changes. Its expansion into the areas north and south of the
8 campus with large dormitories, classroom buildings and parking structures
9 and lots has converted these areas into intensely congested urban areas
10 in extreme contrast with their former modest scale and relatively quiet
11 environment. Traffic destined for the campus has congested many neighbor-
12 hoods, especially in southeast Berkeley.

13 Although the University contributes significantly to the economic
14 functioning of the City, its tax exempt status means that Berkeley's
15 largest landholder, employer and center of activity pays no property tax.
16 It is difficult to measure the cost of the direct services provided by the
17 City such as police and fire service; it is even more difficult to measure
18 the indirect costs such as accommodating high levels of traffic. Since
19 both direct and indirect costs can result in an increased burden for tax-
20 payers, methods of compensating the City for lost property taxes or alterna-
21 tive funding sources to replace dependence on the property tax have been
22 suggested for further consideration.

23 Some University facilities are not open to use by non-University-
24 related persons while City facilities are open to all. Although indications
25 are that University expansion will be very limited in the future--if present
26

ISSUES

UNIVERSITY OF CALIFORNIA, Cont'd

1 trends continued, enrollments may even decline--closer coordination is being
2 maintained with the University in the hopes that expanded joint use of
3 facilities can be attained. The only major new facilities on the Univer-
4 sity's horizon are an Engineering Building and an intra-mural athletic/
5 recreation structure to be financed by student fees, alumni contributions
6 and/or other private support. The sports facility represents a significant
7 opportunity for joint University and City planning and use.

8

9 OTHER INSTITUTIONS

10 The prominent role which the University plays in many aspects of
11 Berkeley life has tended to overshadow the importance of other institutions
12 in the life of the community. Some--such as churches, schools and local
13 government--serve the local population. Others--such as the Schools for
14 the Deaf and Blind, Graduate Theological Union, research institutes and
15 Herrick and Alta Bates Hospitals--serve a much broader clientele.

16 At a time when housing has become increasingly scarce, however, insti-
17 tutional expansion has demolished good housing or converted it to office use.
18 The results of a lack of attention to or adequate control over the character
19 and scale of institutional expansion in the past is evident. Large scale
20 developments of the recent past has led to concern in the community that
21 the City's needs are being compromised to meet institutional needs.

22 As demands for public services increase and Berkeley's tax revenues
23 do not, the City is seeking to minimize the diversion of land from the tax
24 rolls by tax exempt institutions. In the future, the larger institutions
25 will be required to submit institutional Master Plans that indicate their

26

ISSUES

OTHER INSTITUTIONS, Cont'd

1 future needs for Planning Commission and community review. Optimum use of
2 the land and buildings they presently own; the return of surplus properties
3 to private tax-paying ownership; limitations on expansion to avoid conflict
4 with the surrounding area; and City policies and needs would be the criteria
5 applied in reviewing such Plans.

SPECIAL CONCERNS

8 Its long established patterns of residential, commercial, institutional
9 and industrial uses give Berkeley much of its character. This pattern, how-
10 ever leaves little room for change. Many neighborhoods have inadequate
11 park and recreation facilities. Housing, especially for low and moderate
12 income households, is in short supply. Economic development which would
13 increase the tax base and job opportunities is difficult to accommodate.
14 New development in the past has sometimes been disruptive to surrounding
15 areas. Opportunities for significant change are scarce and must be planned
16 to produce the maximum benefit for the community--socially, economically and
17 physically.

18 Development of the Bay Area Rapid Transit produced problems and oppor-
19 tunities for Berkeley. The short and long range impact of the North Berkeley
20 BART Station is one concern. Several years ago the area was rezoned to per-
21 mit only lower density residential development. Residents are still con-
22 cerned that its convenient location and general amenity will cause the City
23 to yield to pressures for higher density. The impact of traffic to the
24 Station is already felt in the neighborhood. The vacant BARTD land north of
25 the Station and east of the Station along the north side of Hearst Avenue
26

ISSUES

SPECIAL CONCERNS, Cont'd

1 are an immediate focus of concern. The Peralta Junior College District in-
2 tends to purchase a portion of the land immediately east of the Station for
3 an education facility despite the City's opposition to such a major new
4 use. A study committee recommended retention of the property for open space
5 and community facilities. The City Council has adopted a policy which
6 would allow some housing development for low and moderate income households.

7 Development above and around the South Berkeley BART Station is seen
8 as an opportunity to revitalize the area. While a number of conceptual
9 schemes have been proposed, a feasible and acceptable plan has not yet been
10 devised.

11 The Santa Fe Railroad runs north and south through Berkeley. South of
12 Russell Street it occupies the center of Sacramento Street and north of
13 Russell Street, it cuts through low density residential areas between Sacra-
14 mento and San Pablo Avenues and continues on through Albany. The railroad
15 plans to discontinue service and has offered to sell its right of way in
16 Berkeley. The City Council is presently negotiating for purchase of this land.
17 Preliminary planning calls for a bike path and open space throughout the
18 length of Berkeley. On larger parcels more detailed planning will seek to
19 effectively serve open space, park and possibly housing needs.

20 Located in a largely low density residential area, the City's Corpora-
21 tion Yard is one of the largest "non-conforming" uses in Berkeley. The
22 policy of the City has long been to relocate it to a more suitable location
23 in the industrial area. The site of the Corporation Yard offers a singular
24 opportunity to satisfy long standing open space needs.

ISSUES

SPECIAL CONCERNS, Cont'd

1 The California Schools for the Deaf and Blind, presently located on a
2 50 acre site in southeast Berkeley will be relocated to another community.
3 Because of the earthquake hazards and rugged character of much of the site,
4 development will require careful design which integrates the potentials
5 and constraints of the location. The nature of this institution has been
6 to generate little traffic or other problems while providing an attractive
7 backdrop of buildings and open space for the area. Any future use/is apt
8 to bring more traffic into an area already overburdened with cars. The
9 State, the University, the East Bay Regional Park District and the City are
10 all studying possible future uses.

11 Berkeley's Central Business District (bounded by Fulton-Oxford on
12 the east, Channing on the south, Grove on the west and Hearst Avenue on the
13 north)* includes intense retail and office activity, the Civic Center, the
14 High School and community theater. The City is purchasing the Farm Credit
15 Building across Civic Center Park from the City Hall to consolidate its
16 offices. Alameda County will be expanding their courthouse facilities on
17 the west side of Grove Street south of Addison. These changes will increase
18 somewhat the total public employment in the Central area and improve the
19 accessibility to City offices.

20 To stimulate Central Business District development, policies for the
21 remainder of the CBD will encourage appropriate housing in the area, improve-
22 ments to the relationship with the campus, and increased retail and office
23 activity.

24 ----- #####

25 *These are boundaries utilized for continuity in data collection; the actual
26 core area for policy and zoning questions is smaller.

III. POLICIES

B-13

THE CHARACTER OF BERKELEY

POLICY 1.00

Evaluate proposed zoning changes and major new development proposals using the following considerations:

- Master Plan Land Use Policies & Map Designation
- Existing Land Use
- Environmental Impact
- Social Impact
- Fiscal Impact on School District and Municipal Services
- Neighborhood Resident, Merchant and Property Owner Concerns

POLICY 1.01

Undertake a program to identify, restore and preserve historic buildings; protect historic structures through careful design and location of adjacent new structures or, if appropriate, by relocation to another site; alleviate potential economic hardships to tenants and owners.

POLICY 1.02

Permit development to accommodate a maximum population of 120,000.

POLICY 1.03

Establish procedures to ensure the effective participation of local residents and community groups in decisions regarding land use.

POLICY 1.04

Prevent traffic and parking generated by commercial, industrial, or institutional activities from being detrimental to adjoining residential areas.

POLICIES

RESIDENTIAL

POLICY 1.10

Conserve lower density/residential areas (less than 50 persons per residential acre) and their complementary churches, schools and parks through zoning limitations on new development and allowable uses of land.

POLICY 1.11

Conserve higher density areas (50 or more persons per residential acre) by permitting new development consistent with zoning limitations/^{only}if its projected density does not exceed the Master Plan density for the area and the project is compatible with surrounding existing uses.

POLICY 1.12

Encourage new high-density development in appropriate locations in the Central District and along major arterials designed for commercial use.

POLICY 1.13

Provide each residential area with adequate municipal facilities and services such as parks, street landscaping, fire and police protection and refuse collection.

POLICY 1.14

To the greatest extent feasible, protect residential streets from hazardous or heavy traffic.

POLICY 1.15

Locate convalescent homes, elderly citizen housing and other extended care facilities in higher density residential areas, near convenience shopping facilities and in areas well served by public transit.

POLICIES

RESIDENTIAL, Cont'd

POLICY 1.16

Preserve the existing residential density along the residentially-zoned portions of Grove Street. Discourage expansion of commercial uses into existing residential areas.

POLICY 1.17

Encourage the revitalization of Ashby Avenue with medium-low density residential uses between College and San Pablo Avenue by refurbishing the street and other public lands, and discouraging further expansion of medical uses east of Telegraph Avenue.

POLICY 1.18

Maintain lower density residential uses along Sacramento Street with a sound commercial area between Oregon and Ashby Avenues. Improve the commercial area between Ashby and Alcatraz Avenue.

COMMERCIAL

POLICY 1.20

Recognize the distinct functions of four types of commercial areas with appropriate land use controls for each type:

-- The Central District: Diverse center of commerce, government and cultural activities for Berkeley.

-- Commercial Service Districts: Auto-oriented commercial activities.

-- Community Commercial Districts: Intermediate-sized commercial centers which provide a wide variety of shopping goods and services to residents.

POLICIES

COMMERCIAL, Cont'd

1 -- Neighborhood Commercial Districts: Small-sized commercial
2 centers intended to provide for day-to-day needs of adja-
3 cent residents.

4 POLICY 1.21

5 Encourage commercial activities serving a regional market to locate in
6 the Central District or a commercial service district and discourage them
7 in neighborhood and community commercial districts.

8 POLICY 1.22

9 Require all new commercial uses in neighborhood or community commer-
10 cial centers and Commercial Service Districts to provide loading facilities
11 and, to the extent necessary, adequate off-street parking.

12 POLICY 1.23

13 Prevent intrusions of traffic and parking generated by commercial uses
14 into adjacent residential areas.

15 POLICY 1.24

16 Control the design and operation of commercial establishments to insure
17 their compatibility with adjacent residential areas.

18 POLICY 1.25

19 Enhance the public investment in the renovation of San Pablo Avenue by
20 encouraging new commercial investment and higher density residential uses
21 where sites permit controlling the impact of heavy traffic.

22 POLICY 1.26

23 Along University Avenue, encourage development of under-utilized sites
24 for commercial or service activities that serve a regional or citywide
25 market.

POLICIES

INDUSTRIAL

POLICY 1.30

Encourage industries which will provide modern, attractive plants which meet applicable standards for air quality, noise generation and liquid waste disposal.

POLICY 1.31

Urge industrial uses presently located in residential areas to relocate in the industrial area.

POLICY 1.32

Limit development in the manufacturing area to industrial and related commercial uses.

POLICY 1.33

Improve streets and public utilities to encourage investment in new and existing industrial uses.

POLICY 1.34

Retain the Harrison Tract in University ownership until a joint City/University study determines the appropriate use for the parcel.

POLICY 1.35

Require adequate off-street loading and parking facilities in new or expanded industrial uses.

THE UNIVERSITY OF CALIFORNIA

POLICY 1.40

Urge the University to maintain a maximum enrollment of 27,500 students to avoid undue strain on public facilities and housing resources; coordinate planning for transportation and community development.

POLICIES

THE UNIVERSITY OF CALIFORNIA, Cont'd

1 POLICY 1.41

2 Discourage the acquisition or leasing of additional property by the
3 University unless the property remains on the tax rolls.

4 POLICY 1.42

5 Coordinate with University to maximize joint use of such facilities as
6 libraries and recreational resources that will serve the total community.

7 POLICY 1.43

8 Recommend that the University implement the following proposals re-
9 garding its off-campus holdings:

- 10 1) Oxford Tract - Develop with higher intensity University
11 uses or return to private ownership for high density
12 residential use.
- 13 2) Hill Lands - Develop as an open space/recreational
14 resource in cooperation with the City and consistent
15 with the Master Plan Open Space Element.
- 16 3) Haste Tract (People's Park) - Develop for open space/
17 recreational purposes in conjunction with the City;
18 utilize portions for student housing.
- 19 4) Parking Lot East of Fulton Between Bancroft and Durant -
20 Utilize for the proposed intramural athletic complex.
- 21 5) Anna Head School Site - Determine appropriate use after
22 evaluation by the Landmarks Preservation Commission.

23 POLICY 1.44

24 Recognizing that the main campus is becoming overbuilt, endangering its
25 remaining open space and beauty, oppose the construction of major new build-
26 ings on sites having significant open space values. Urge the University to
27 adopt campus development standards and policies designed to conserve and
28 enhance present open space resources.

POLICIES

THE UNIVERSITY OF CALIFORNIA, Cont'd

1 POLICY 1.45

2 Encourage the University to lease space for needed administrative and
3 research activities in privately-owned existing and new buildings in the
4 Central area.

6 OTHER INSTITUTIONS

7 POLICY 1.50

8 Discourage to the maximum extent possible additional institutional
9 uses that take property off the tax rolls.

10 POLICY 1.51

11 Persuade federal, state, county, schools and other governmental insti-
12 (including the University of California)
13 tutions/exempt from municipal regulations to adhere to Berkeley's laws,
14 ordinances and policies.

14 POLICY 1.52

15 Influence public and private institutions to use their existing contigu-
16 ous landholdings and to return unused landholds or facilities to the tax
17 rolls.

18 POLICY 1.53

19 Wherever possible, locate or relocate public and private institutional
20 uses that serve primarily the entire city or region on major arterials so
21 that they are accessible to public transportation and will not disrupt
22 adjacent residential areas.

23 POLICY 1.54

24 Maximize joint City/Unified School District use of and planning for
25 facilities such as recreation, libraries and cultural centers.

26

27

POLICIES

SPECIAL CONCERNS

POLICY 1.60

Retain the North Berkeley BARTD Station and parking lot in their present use and current size and scale; acquire the "Hearst Strip" and other excess BARTD property in the North Station area to be used primarily for park and community facilities with small areas devoted to housing.

POLICY 1.61

Intensively develop the Ashby BARTD Station air rights and related adjacent commercial areas to fully realize their economic potential.

POLICY 1.62

Acquire the Santa Fe Railroad right-of-way for development as a park with a bicycle lane.

POLICY 1.63

Relocate the City Corporation Yard to an appropriate location in the industrial area and develop the site for parks, recreation and housing.

POLICY 1.64

Retain Civic Center Park as the focal point of the Civic Center; do not expand the complex beyond McKinley on the west, Addison on the north, Milvia on the east or Allston Way on the south.

POLICY 1.65

Encourage high-density residential use--especially student-oriented housing--on privately owned land along Oxford Street and the side streets between Oxford and Shattuck Avenue.

POLICY 1.66

Acquire or have another public agency retain the site of the California State Schools for the Deaf and Blind for use predominantly for open space; subject to geologic studies of specific sites, permit some medium-low density housing in the northwest quadrant.

CHAPTER I

Section 1.01. The purpose of this chapter is to provide a general framework for the study of the various aspects of the problem. The study is divided into three main parts: the first part deals with the general theory, the second part deals with the special theory, and the third part deals with the applications.

CHAPTER II

Section 2.01. In this chapter, we shall study the properties of the various functions which arise in the theory. We shall first study the properties of the functions which are defined by the integral equations, and then we shall study the properties of the functions which are defined by the differential equations.

CHAPTER III

Section 3.01. In this chapter, we shall study the properties of the various functions which arise in the theory. We shall first study the properties of the functions which are defined by the integral equations, and then we shall study the properties of the functions which are defined by the differential equations.

CHAPTER IV

Section 4.01. In this chapter, we shall study the properties of the various functions which arise in the theory. We shall first study the properties of the functions which are defined by the integral equations, and then we shall study the properties of the functions which are defined by the differential equations.

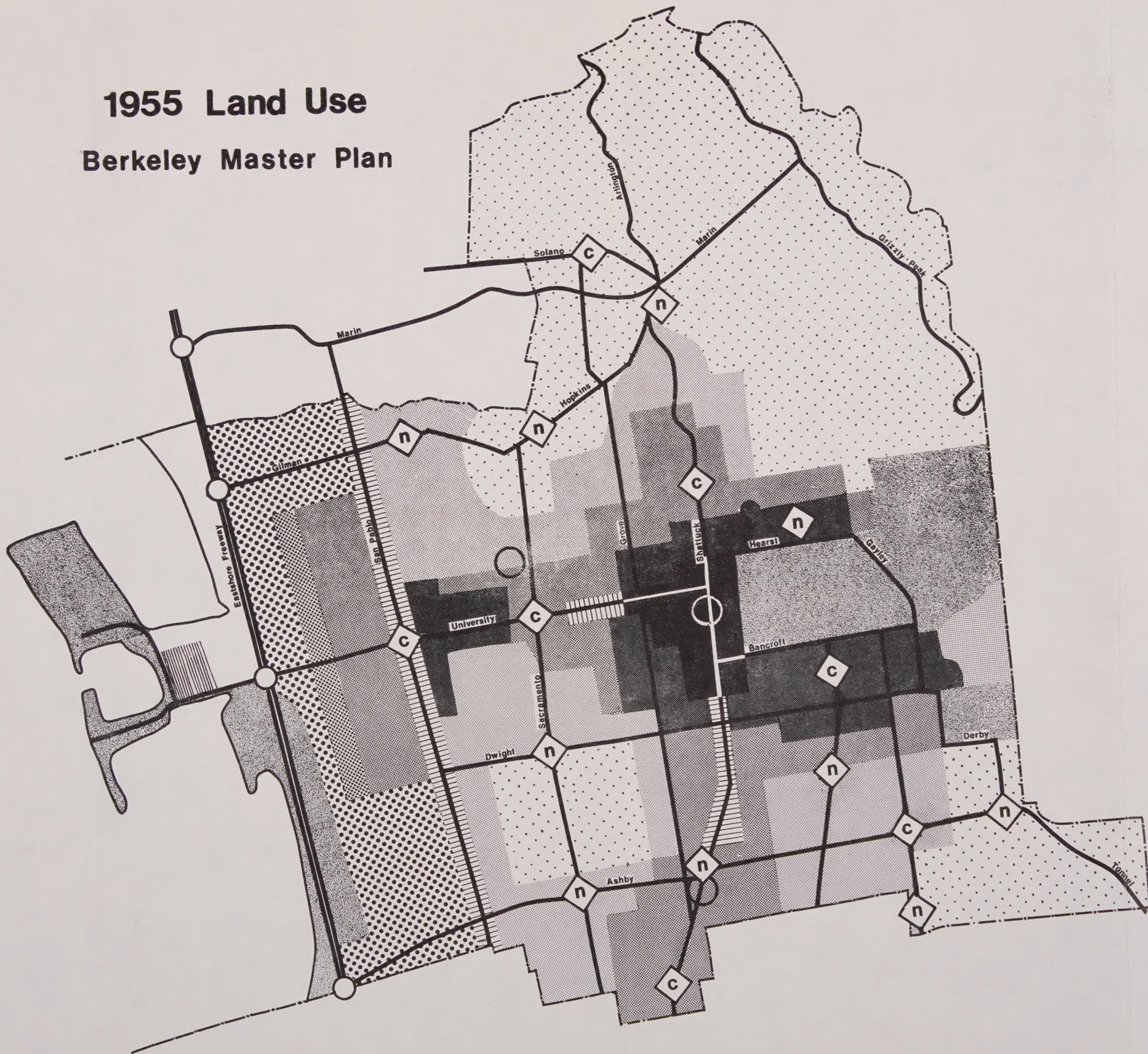
CHAPTER V

Section 5.01. In this chapter, we shall study the properties of the various functions which arise in the theory. We shall first study the properties of the functions which are defined by the integral equations, and then we shall study the properties of the functions which are defined by the differential equations.

CHAPTER VI

Section 6.01. In this chapter, we shall study the properties of the various functions which arise in the theory. We shall first study the properties of the functions which are defined by the integral equations, and then we shall study the properties of the functions which are defined by the differential equations.

1955 Land Use Berkeley Master Plan



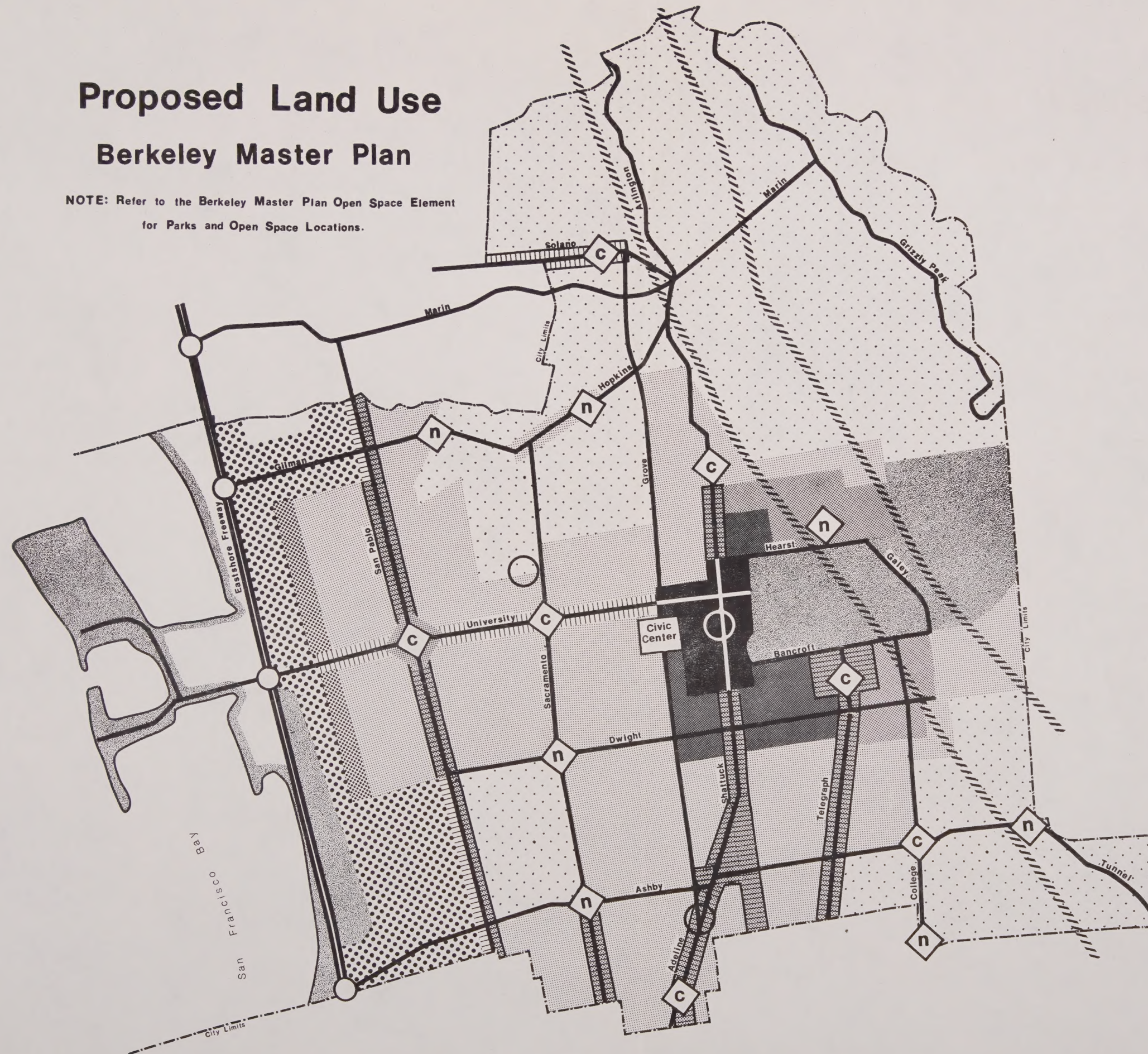
Legend

- 0 — 30 Persons per Residential Acre
- 31 — 50 Persons per Residential Acre
- 51 — 70 Persons per Residential Acre
- 71 — 120 Persons per Residential Acre
- Central District
- Commercial Service District
- Commercial / Recreational District
- Neighborhood Shopping District
- Community Shopping District
- Industrial District
- Special Industrial District
- Recreational / Institutional District
- Area for Future Study
- Freeway and Interchange
- Thoroughfare
- B.A.R.T.D. Station



Proposed Land Use Berkeley Master Plan

NOTE: Refer to the Berkeley Master Plan Open Space Element
for Parks and Open Space Locations.



Legend

- 0 - 30 Persons per Residential Acre
- 31 - 50 Persons per Residential Acre
- 51 - 70 Persons per Residential Acre
- 71 - 120 Persons per Residential Acre
- Central District
- Commercial Service District
- Commercial/Residential District
- Neighborhood Shopping District
- Community Shopping District
- Area for Future Study
- Industrial District
- Special Industrial District
- Recreation/Institutional
- Freeway and Interchange
- Thoroughfare
- B.A.R.T.D. Station
- Seismic Safety Study Boundary

SCALE IN FEET
0 2500 5000 7500



Prepared by the Comprehensive Planning Department July, 1976

B-206

2. LABORATORY REPORT

100

7-1

- Working Facilities

7-2

- 1st floor
- 2nd floor
- 3rd floor
- 4th floor
- 5th floor
- 6th floor

7-3

- 1st floor
- 2nd floor
- 3rd floor
- 4th floor
- 5th floor
- 6th floor

7-4

- 1st floor
- 2nd floor

7-5

INTRODUCTION

1 Compared with other communities, Berkeley is well-served by its convenient
2 location and variety of transportation services and facilities. But its needs
3 for transportation are also high. Persons come here to work and go to school.
4 Many citizens live here and work elsewhere. Its residents enjoy the recrea-
5 tional, cultural, and commercial opportunities of the entire region. Persons
6 from throughout the area utilize Berkeley's businesses and services as well as
7 enjoying the University's many attractions. The challenge for Berkeley is to
8 preserve its character as it responds to the myriad transportation needs of its
9 residents, employees, students and visitors.

10 The Transportation Element establishes policies for the movement of goods
11 and persons from one location to another - whether by foot, bicycle, automobile,
12 bus, boat, truck or railroad. Planned principal roadways, scenic routes and
13 rail lines are identified on the Circulation Plan Map. Maps of current bike-
14 ways, present plans for a complete bikeway network and pathways are included.

Existing Facilities

16 Berkeley does not have an integrated transportation system but rather a
17 combination of facilities and services operating simultaneously. Serving inter-
18 regional needs are railroads, airlines, bus lines and freeways. Regional
19 transportation serving Berkeley includes freeways, inter-city major streets,
20 Bay Area Rapid Transit and AC Transit. Special purpose regional transportation
21 is provided by limousine and helicopter service to Oakland and San Francisco
22 Airports and weekend ferry service during warm weather to Angel Island.

23 Providing access to all properties in the City are public rights-of-way
24 for the movement of goods and people. These include vehicle roadways, side-
25 walks, bikeways and open spaces. AC Transit provides scheduled local services
26
27

Existing Facilities, Cont'd

1 to many locations. Taxicabs provide individual door-to-door service. A vari-
2 ety of special purpose transit services to the campus, for elementary and
3 secondary students, for the disabled, and for other special purposes serve
4 various locations and population groups. The hill areas have many exclusive
5 pedestrian ways.

ISSUES

Land Use

9 Land use (homes, business, schools, industry, recreation) is linked
10 closely to the availability of transportation. New development moves to areas
11 with good accessibility. When development occurs, demands for improved access
12 follow. As automobile usage increases, the City's major activity centers,
13 especially the University, generate ever-increasing volumes of traffic. As
14 Berkeley's young adult population increased, the number of vehicles registered
15 to Berkeley citizens increased. If these trends are to be moderated or re-
16 versed, City action must seek to stimulate increased transit use as well as
17 reduce auto trips. Development in areas inadequately serviced by transit must
18 be limited. For example, reuse of the site of the School for the Deaf and
19 Blind and commercial and institutional development north of the campus must be
20 sensitive to the transportation demands such development would produce. At
21 the same time, by stimulating activity in locations well-served by public
22 transportation, such as the Central Business District, traffic impacts can be
23 minimized. The Land Use Element incorporates this approach of encouraging
24 development in areas well-served by transportation and restricting activity in
25 other locations.

Environment

As understanding of environmental impacts becomes greater, so does awareness of the resources devoted to transportation. The most direct is the utilization of land - primarily for roadways and parking. Transportation consumes approximately 25% of developed land in urbanized areas. Because these spaces are largely paved, rain water run-off increases, necessitating large investment in storm sewers and drainage facilities.

Heavy traffic presents hazards to persons and property. Where pedestrians, bike riders and motor vehicles share the right-of-way, such as occurs on most streets in Berkeley, accident risk increases. High volumes of autos, buses, bikes, motorcycles and pedestrians result in congestion and accidents. On local streets, high speeds endanger residents. Noise and air pollution are further problems resulting from intensive traffic. Large vehicles such as trucks and buses and motorcycles produce noise problems. Reducing their use in residential areas would mitigate these problems. Air pollution is a regional problem as well as a local one. While steps to control emissions from trucks and buses make busy streets more tolerable for pedestrians and cyclists, actions at the state and national levels are needed to solve regional air quality problems. These actions include incentives to reduce trips, emission control and land use planning.

Finally, the appearance of and views from public rights-of-way should be enhanced. Berkeley enjoys unparalleled vistas of the Bay and its communities. By protecting view points, moving through the region can become a pleasant experience. The right-of-ways themselves should be enhanced to make them attractive for user and abutting residents and businesses. Where heavy traffic must pass through residential areas, its impact should be minimized by sensitive landscaping and street design which promote lower speeds. Separation

Environment, Cont'd

1 of pedestrian and motor vehicles should be pursued. Street designs should con-
2 tribute to the visual distinctiveness of Berkeley's varied residential and
3 commercial environments. Street maintenance is needed to promote visual amen-
4 ity and safety.

5 A major criterion for transportation policy in the future will be energy
6 conservation. As fossil fuels (coal, oil, gas) become scarcer and more expen-
7 sive, energy-efficient transportation will become ever more important. Energy-
8 efficient transportation can be achieved through smaller vehicles, shared trips
9 (such as on transit or car pools), pedestrian and bicycle trips, multi-purpose
10 trips and fewer trips. Energy conserving actions will benefit the environment
11 by reduced noise and air pollution, greater safety and improved amenity.

Traffic

13 The popularity of the automobile is not hard to understand. It offers
14 comfort, speed, privacy, relative safety and reliability, and maximum flexi-
15 bility and convenience for short and long trips at a price within the reach
16 of most households. Trucks offer comparable advantages to business and
17 industry. Since World War II, commercial, residential and industrial develop-
18 ment has reflected the growing availability of motor vehicles for all types of
19 trips - work, business, and recreation. The costs for this increasing reli-
20 ance upon individual transportation, however, have been considerable.

21 Older communities, such as Berkeley, which were developed when needs for
22 transportation were different and public transportation handled a larger pro-
23 portion of the trips, have been especially hard-pressed to accommodate increas-
24 ing automobile use. Arterials which often run through residential areas becom
25 congested. Traffic and parking spill over into local streets. Parking lots
26
27

Traffic, Cont'd

1 and structures occupy prime space near major activity centers. As the region
2 and its vehicle usage grows, traffic moving through, in and out of Berkeley
3 also increases fostering greater noise, air pollution and accidents. In-
4 creased auto dependence also leads to isolation of those who cannot drive -
5 the young, the infirmed, the disabled and the poor.

6 Berkeley is sensitive to these problems and has been in the forefront of
7 dealing with them. In 1968 the City Council adopted a revised Circulation
8 Element of the Master Plan. Its goal of reduced dependence on the automobile
9 called for severe restrictions on street widening, the use of traffic control
10 devices to protect residential areas, and improvements to alternative forms of
11 transporation. This Transportation Element reaffirms these positions and adds
12 others concerning parking, land use control, environmental protection and
13 citizen participation in transportation planning.

14 Traffic has been especially heavy in southeast Berkeley (south of Dwight
15 Way, east of Shattuck). Ashby Avenue, Telegraph Avenue, College Avenue,
16 Claremont Avenue and Tunnel Road all pass through the area and link regional
17 freeways with Berkeley's major activity centers. Land use in the area includes
18 residential areas made up of large, older homes, mixed residential and commer-
19 cial uses along the major streets, a large hospital/medical complex between
20 Telegraph and College, and apartment development north of Derby. Telegraph
21 Avenue is the only major street in the area with sufficient width to carry four
22 lanes of traffic effectively. Berkeley has for many years been seeking ways
23 to reduce this traffic impact without merely shifting the problem from one lo-
24 cation to another. For example, the City has urged the State to complete the
25 Landvale Interchange which would encourage westbound traffic from the Warren
26
27

Traffic, Cont'd

1 Freeway to use the Grove/Shafter Freeway rather than Tunnel/Ashby for cross-
2 town trips. The Council has requested that Ashby Avenue be removed from the
3 State Highway system, thus giving the City control over its design and use.
4 Proposals have been put forth for its conversion to a transit corridor with no
5 automobile connection to the Warren and Grove/Shafter Freeways.

6 Traffic in southeast Berkeley has resulted in traffic congestion which
7 sometimes impedes transit service. The intersections of Ashby and Claremont
8 Avenues and Ashby and College Avenues have consistently been found to be the
9 most congested in Berkeley. Some operation improvements on the major streets
10 have been made. Restrictions to prevent the use of neighborhood streets by
11 through traffic, however, have increased demands upon these major streets.
12 The only satisfactory long-term solution is to reduce this demand by more use
13 of transit or car pooling.

14 A continuing issue in many parts of Berkeley is the use of local residen-
15 tial streets by through traffic, especially when arterials are congested.
16 Initial measures to deal with this problem resulted in the installation of
17 diverters in the San Pablo neighborhood. In the years that followed, traffic
18 controls were introduced into West Berkeley, the Claremont-Elmwood neighbor-
19 hood, North Berkeley, and other isolated locations where problems were acute.
20 In 1975, after three years of dialogue with citizens from all areas of the
21 community, a city-wide Traffic Management Plan was approved whose objectives
22 were to discourage through traffic use of local residential streets through
23 use of such devices as diverters, street closures, speed reduction circles,
24 chokers and stop signs. Opposition to the Plan focused on reduced accessi-
25 bility to many locations; difficulties for emergency services, refuse collec-
26 tion, school transportation and delivery services; and increased traffic and
27
28

Traffic, Cont'd

1 congestion on some major streets. The electorate in 1976 rejected an initiative
2 that would have prohibited devices designed to restrict use or access to local
3 streets. The Traffic Management Plan is presently being evaluated and refined
4 by the City Council.

5 An initial evaluation study found that traffic has been reduced on the most
6 impacted local streets; traffic increases on major and collector streets have
7 not caused serious congestion or adversely affected AC Transit service; no cat-
8 astrophic incidents have resulted from interference with emergency services
9 during the trial period; and no increase in traffic accidents has occurred.

10 Improved traffic management can reduce the negative impacts of automobile
11 use. Long range improvements will require a reduction of automobile trips. If
12 Berkeley's economic base is not to be compromised, transportation opportunities
13 must be maintained and enhanced through increased car pooling and shifts to
14 other modes of transportation. The following sections will consider ways to
15 encourage these shifts. The Parking section will consider how parking policy
16 can minimize automobile use without adversely affecting local economic activity.
17 Beyond these local actions, external factors may lead to reduced automobile use.
18 These may include: a) high cost or reduced availability of gasoline or automo-
19 biles; b) limitations on automobile usage; or c) increased funding for transit.

Transit

21 Increased use of public transportation is essential if automobile usage is
22 to be appreciably reduced and the amenity of cities such as Berkeley preserved
23 and restored. Public transportation in Berkeley at present includes: BART
24 operates regional service to San Francisco, Fremont, Concord and Richmond; AC
25 Transit provides extensive local and regional service to Hayward, Oakland,
26
27

Transit, Cont'd

1 San Francisco and Richmond; the University of California provides shuttle ser-
2 vices from the downtown Berkeley BART Station and between its various facilities;
3 transportation for the disabled, elderly and retarded is provided by social
4 service agencies; other public transportation includes elementary school bus
5 services, taxi cabs and limousine services to Oakland Airport. Compared to
6 other communities, these services are good. Still, of the more than 650,000
7 person trips to, from and within Berkeley each day, less than 50,000 are by
8 transit and almost 500,000 are by automobile. The recently completed Berkeley
9 Coordinated Transit Project discovered that some travel needs - such as between
10 Berkeley, Oakland and downtown San Francisco - are well served by public tran-
11 sit which attracts a substantial proportion of such trips. Other needs are not
12 as well served, specifically:

- 13 - local service between points in Berkeley, especially east/west service;
- 14 - service to the campus and industrial area;
- 15 - coordination with BART.

16 Despite relatively poor transit service, trips to and from the campus make up
17 one-third of all transit trips in Berkeley. Of persons coming from out of town,
18 approximately 35% use transit. The limited availability of cars among students
19 and the parking problems around the campus contribute to this high use level.
20 Transit improvements combined with automobile disincentives (such as reduced
21 and/or more expensive parking) might further increase the proportion. High
22 campus usage contrasts with low transit usage by other persons coming to Ber-
23 keley for working, shopping, business and recreational trips. Little has been
24 done by public and private employers to encourage transit use or car pooling.

Transit, Cont'd

1 The study prepared for the Coordinated Transit Project has made detailed
2 recommendations. (The study is currently being reviewed by the Transit Coordi-
3 nation Board, its Citizen Advisory Committee, and the agencies providing
4 transportation services to Berkeley): These include:

- 5 - reorganizing existing local routes to better serve local needs;
- 6 - a coordinated demand/responsive service for the disabled and other
7 special needs;
- 8 - a fare policy that includes passes, merchant rebates and a fare
9 marketing element;
- 10 - bus shelters at key transfer points and major stops to keep people
11 dry, warm and safe;
- 12 - improved bike access to transit, safe bike storage, and facilities
13 for carrying bikes on transit vehicles;
- 14 - increased service to the industrial area and campus;
- 15 - exclusive bus lanes on Shattuck and Bancroft.

Parking

16
17 A key element in transportation planning is parking. As automobile usage
18 has increased, so has the demand for parking by visitors, residents, employees,
19 students and businesses. Parking is supplied in a variety of ways. Residen-
20 tial uses and many commercial establishments have private off-street parking
21 available. Major activity centers such as the University, Central Business
22 District, Sather Gate, BART and the hospitals have one or more parking struc-
23 tures and/or large surface parking lots. Most Berkeley streets have lanes for
24 parallel parking on either side. How the City controls and regulates these pub-
25 lic and private parking resources can have significant impact on the physical
26
27

Parking, Contd

1 character of many areas, the economic viability of Berkeley and the individu-
2 al's choice among transportation alternatives.

3 Demand for short-term parking will continue for shoppers, visitors and
4 clients. If such parking is not available at a reasonable location and price,
5 retail and service establishments will suffer economically with adverse effects
6 on Berkeley's tax revenue and employment. With these short-term demands spread
7 throughout the day and, in some cases, evening, multiple use of each parking
8 space can be obtained. A high priority should continue to be given this type
9 of parking. Only where it inhibits effective transit service, emergency access
10 or the amenity of residential areas should short-term parking be restricted.

11 Demand for resident parking has increased along with the proportion of the
12 population made up of adults. For many years, the Zoning Ordinance required
13 the provision of one parking space for each new residential unit. In recent
14 years this standard has proved inadequate. Larger homes are often occupied by
15 households with numerous cars. At the same time, senior citizens occupying
16 small apartments often do not have cars. Changes have been made in the Zoning
17 Ordinance to reduce parking requirements in senior citizen apartments, espe-
18 cially those well-served by transit, and to relate parking demands to floor area
19 rather than number of units in apartment zones. Ways of controlling the number
20 of vehicles owned by residents and parked on the street are being explored. To
21 encourage more new housing in the Central District and other locations well-
22 served by transit, attention should be given to further revision of requirements
23 for the provision of parking.

24 Long-term daytime parking by employees and students is the segment of
25 parking demand most troublesome in many areas of the City. The availability of
26
27

Parking, Cont'd

1 reasonably-priced convenient parking for long-term daytime parking by employees
2 and students encourages automobile use by these groups and is a cause of much
3 of Berkeley's traffic problems, particularly peak hour traffic problems. In
4 unmetered residential areas within several blocks of the University, the Civic
5 Center and the hospitals, all on-street spaces may be occupied during a typical
6 working day. Moderate priced parking lots develop on residential lots to serve
7 this demand. A significant proportion of parking structure spaces also serve
8 this long-term population. If traffic is to be reduced, transit use increased,
9 and residential amenity re-established in affected areas, steps are needed to
10 limit this supply of long-term daytime parking. Studies are presently underway
11 to determine legal methods for limiting long-term parking by non-residents in
12 residential areas. The University is looking into ways of regulating its
13 parking to (1) encourage car pooling and (2) to give priority to persons need-
14 ing vehicles needed during the day, the disabled and persons not currently
15 served by transit. The City, hospitals and other traffic generators can fol-
16 low this example. Where off-street parking exists that exceeds short-term,
17 resident and business needs, redevelopment for other uses should be encouraged.
18 The development of the City's transportation policies recognizes that parking,
19 traffic and transit are inter-related and need to be planned and operated as
20 an integral system if they are to collectively respond to Berkeley's overall
21 goals.

Other

22
23 With its large student and young adult population, mild climate, compact
24 development and level terrain around activity centers, Berkeley has opportuni-
25 ties to transform the bicycle from a child's toy to an important form of trans-
26 portation and recreation for all ages. An extensive network of bikeways has
27

Other, Cont'd

1 been planned and its initial phase implemented. Bike parking racks have been
2 installed on the campus, in the Central Business District and at other activity
3 centers.

4 Obstacles to bicycle use still exist, however. The greatest obstacle is
5 competing traffic (including buses and trucks) on narrow streets. While bike
6 riders are legally equal to motor vehicles on public streets, to assert these
7 rights can be extremely hazardous. Exhaust fumes and aggressive dogs are fur-
8 ther complications.

9 To the extent possible, Berkeley is supporting the use of bicycles for
10 transporation and recreation. Lockable (and often covered) bike storage is
11 being installed in many locations. Bike routes have been designated whenever
12 possible on streets parallel to, rather than on, busy transit and traffic
13 streets. Continued study on feasible means of providing safe and convenient
14 bike access to the Waterfront is needed. More accommodation of bikes on transit
15 vehicles is being sought.

16 In recent years, a number of improvements to pedestrian movement in Berke-
17 ley have been accomplished. In the early 1960's, the University developed the
18 Sather Gate Plaza as an attractive and busy transition from the commercial areas
19 of Telegraph Avenue to the campus. Telegraph Avenue south of the campus was
20 itself reconstructed with pedestrian amenities and street trees. With the de-
21 velopment of BART, downtown Berkeley and the Adeline/Alcatraz area were recon-
22 structed with plazas, benches, landscaping and lighting. By improving the
23 traffic flow on North Shattuck and University, these street reconstructions
24 indirectly improved the pedestrain amenity of adjacent commercial areas. San
25 Pablo Avenue is currently being reconstructed.

Other, Cont'd

1 Another aspect of pedestrian traffic is in the hills. With streets follow-
2 ing the contours of the hills, pedestrian short cuts have been dedicated in a
3 large number of locations. Many of these, however, have never been improved and
4 are unpassable. As a component of both the transportation and open space system
5 of the City, their improvement for pedestrian use is being encouraged. The
6 pedestrian linkage between the University and the Central Business District is
7 weak. High traffic volumes, existing land use and block patterns inhibit this
8 movement. Urban design studies of the Central Business District are needed to
9 develop specific methods for improving such pedestrian linkages.

10 Fortunately Berkeley's industrial area is adjacent to both the freeway and
11 the regional rail lines. Some conflicts are still to be resolved between
12 industrial and residential uses west of San Pablo Avenue. The Transportation
13 Element proposes to ease this problem by establishing an additional collector
14 street within the industrial area along Fourth Street. Heavy truck traffic pro-
15 duces few problems for the rest of Berkeley. The Santa Fe Railroad still oper-
16 ates a few freight trains along its right-of-way through residential areas but
17 could relocate this service to the Southern Pacific lines which are in the
18 industrial area.

19 Problems are created when delivery vehicles on busy streets double park,
20 causing congestion, slowdowns to transit service and traffic hazards. Where
21 adequate loading zones cannot be provided, deliveries should be scheduled at
22 hours which will not interfere with traffic and transit movement.

23 Since its initiation, the ferry service on weekends from the Berkeley
24 Marina to Angel Island has proved very popular. With development of the Golden
25 Gate National Recreation area, the expansion of this service to San Francisco,
26 Alcatraz and Sausalito should be encouraged.

TRANSPORTATION POLICIES

GeneralPolicy 2.00

Integrate Berkeley's transportation facilities with those of other cities and counties of the Bay Area to provide access to all areas within Berkeley and the region through a coordinated system of public transportation and motor vehicle, bicycle and pedestrian facilities.

Policy 2.01

Reduce dependence on the private automobile as the dominant mode of transportation by developing alternatives for local and regional transportation which are convenient, pleasant to use, reasonably priced and reliable.

Policy 2.02

Permit significant expansion of commercial, office and institutional activities which generate traffic only in areas served by transit.

Policy 2.03

Take steps locally and with other agencies to reduce noise and air pollution produced by transportation vehicles and take steps to mitigate unavoidable impacts.

Policy 2.04

Conserve energy by initiating incentives to: a) reduce the number of vehicle trips; b) increase walking, transit and bicycle use; and c) develop energy efficient methods for moving people and goods.

Policy 2.05

Design, develop and maintain transportation facilities as public places which are attractive to users and nearby persons; insure safety and amenity for pedestrians; and preserve the natural beauty and existing character of the area involved .

TRANSPORTATION POLICIES, Cont'd

1 Policy 2.06

2 In order to reduce traffic demand, encourage persons who work or go to
3 school in Berkeley to live in Berkeley or use public transportation.

4 Policy 2.07

5 Involve local residents, businesses and institutions in all stages of
6 planning for transportation.

7 Policy 2.08

8 Maintain effective emergency service access to all locations.

9 Policy 2.09

10 Permit temporary closure of streets for social, cultural and recreational
11 activities where the closure will not be detrimental to the adjacent residents
12 or public transit service.

13 Policy 2.10

14 Oppose additional freeway construction in Berkeley, either on new routes
15 or through the expansion of existing facilities.

16 Policy 2.11

17 Where feasible, consider the conversion of streets or portions of streets
18 for other public uses, such as useable open space.

19 Policy 2.12

20 Develop an effective program for cleaning streets and removing litter from
21 traffic on collector and major streets.

22 Scenic Routes23 Policy 2.20

24 Along designated scenic routes, undertake efforts to: a) develop supple-
25 mentary tree planting and landscaping; b) conserve, enhance and protect scenic
26
27

TRANSPORTATION POLICIES, Cont'd

views observable from the routes; and c) provide, where possible, recreational uses, roadside rests and observation points.

STREETS

Major and Collector StreetsPolicy 2.30

On major streets, give priority to the movement of transit and traffic over needs for parking and turning.

Policy 2.31

Utilize major streets which have wide right-of-way and/or are located in non-residential areas to carry as much of the traffic demand as possible.

Policy 2.32

Limit speed and, where appropriate, types of vehicles permitted on major or collector streets passing through residential areas.

Policy 2.33

On collector streets, balance the needs for traffic and transit movement, turning, parking and access. In specific instances and certain times (such as rush hour), one function may take precedence over others.

Policy 2.34

Prohibit street-widening unless: a) all other feasible means - such as parking restrictions, turning controls, traffic devices, etc. - have been proven inadequate; b) congestion is impeding public transit service or is a clear threat to safety and amenity; and c) no alternative route or means of transportation is available.

Policy 2.35

On local streets give priority to ease of access, pedestrian movement, neighborhood amenity and resident parking.

1 Policy 2.36

2 Prevent to the greatest extent possible the use of local streets by through
3 traffic.

4 Policy 2.37

5 Improve local streets with needed curbs, gutters, pedestrianways, bikeways,
6 landscaping and lighting.

7 Policy 2.38

8 Permit compatible transit service on local streets where such routing is
9 needed to provide effective public transportation.

10 PUBLIC TRANSPORTATION

11 Policy 2.40

12 Insist upon coordination of services provided by AC Transit, BART, the
13 University of California, the Berkeley Unified School District, taxicab compa-
14 nies and other groups to produce maximum convenience and service for those
15 living, working, or going to school in Berkeley.

16 Policy 2.41

17 Cooperate in developing expanded educational and promotional programs to
18 increase community awareness and use of public transportation.

19 Policy 2.42

20 Work with AC Transit to reorganize local public transit routes to better
21 serve local travel needs. Maintain and improve transit services for subregional
22 and regional trips.

23 Policy 2.43

24 Coordinate special services and encourage adaption of AC Transit vehicles
25 to serve the disabled and others with special needs.

26

27

28

TRANSPORTATION POLICIES, Cont'd

Policy 2.44

Foster the provision of bus shelters that keep people dry, warm, and safe at key transfer points and major stops.

Policy 2.45

Support a fare program which: a) offers incentives for transit use such as monthly pass discounts and merchant validation; and b) which facilitates transit use by such means as numerous locations to purchase tickets and credit arrangements.

Policy 2.45

Seek to expand the funds available to improve and operate public transportation.

Policy 2.46

Support the provision of transit service within one-quarter mile of all the City's homes, businesses, educational institutions and recreational centers.

Policy 2.47

Explore methods to increase transit usage such as shuttle services, off-peak hour incentives, expanded package delivery services and flexible routing.

Policy 2.48

Give priority to transit movements on major corridors such as College Avenue, University Avenue, Shattuck Avenue, Telegraph Avenue, Bancroft/Durant and San Pablo Avenue.

PARKINGPolicy 2.50

Discourage parking in residential areas by employees and students of nearby major commercial establishments, offices and institutions.

TRANSPORTATION POLICIES, Cont'd

Policy 7.51

In locations well served by transit, permit the reduction or elimination of parking requirements in new residential developments or its location in existing parking structures.

Policy 2.52

As an alternative to parking validation, encourage retail establishments to provide reimbursement of local transit fares.

Policy 2.53

Encourage large employment centers, such as the University and the City, to provide employee parking on the basis of: a) need for vehicle on the job; b) number of passengers carried; c) employee disability; or d) lack of alternative public transportation.

Policy 2.54

Increase fees for long-term daytime parking.

Policy 2.55

Authorize parking lots in residential areas only to serve permitted uses within the area.

Policy 2.56

Maintain short-term parking for customers and visitors in the Central District. Encourage the conversion of excess off-street surface parking for commercial and/or residential use.

Policy 2.57

Encourage the University of California to reduce its surface parking capacity.

Policy 2.58

Evaluate opportunities for peripheral parking with shuttle services to the University of California and other activity centers.

1 Policy 2.59

2 Limit the cars associated with each residential unit which rely upon
3 public on-street parking for storage.

4 Policy 2.60

5 Enforce parking regulations against parking on lawns and sidewalk areas.

6 OTHER

7 Bicycles

8 Policy 2.61

9 Provide the opportunity for safe, convenient and pleasant bicycle travel
10 throughout all areas of Berkeley.

11 Policy 2.62

12 Encourage the use of bicycles for both transportation and recreation.

13 Policy 2.63

14 Coordinate and develop inter-city routes and support additional opportuni-
15 ties to carry bikes on public transportation.

16 Policy 2.64

17 Promote installation of covered, lockable bicycle storage at BART stations,
18 major bus stops and major activity centers.

19 Policy 2.65

20 Evaluate and complete the system of planned bikeways in Berkeley.

21 Policy 2.66

22 Locate bikeways on streets with lower volumes of automobile traffic for
23 safety and reduced levels of harmful exhaust fumes and unpleasant noise.

24 Policy 2.67

25 Consider the inclusion of bikeways and/or bike storage in the design of
26 all new or reconstructed streets, recreational areas or buildings.

27

28

1 Pedestrians

2 Policy 2.70

3 Develop those pathways dedicated but not improved for public use.

4 Policy 2.71

5 Where feasible, develop new pathways to improve access between the campus
6 and the Central District.

7 Policy 2.72

8 Maintain and improve sidewalks in commercial areas with participation from
9 users and adjacent residents or businesses so they are safe, clean, attractive,
10 and free from all possible air and noise pollution.

11 Movement of Goods

12 Policy 2.73

13 Encourage trucks to use streets in industrial and commercial areas.

14 Policy 2.74

15 Limit to the extent possible the movement or parking of trucks in residen-
16 tial areas.

17 Policy 2.75

18 Prevent delivery vehicles from impeding transit and/or other transporta-
19 tion services.

20 Policy 2.76

21 Establish truck routes which reduce, as much as possible, truck use of
22 residential streets.

23 Miscellaneous

24 Policy 2.77

25 Encourage Santa Fe to complete arrangements with the Southern Pacific
26 Railroad to relocate their freight service to the Southern Pacific tracks.

27

28

TRANSPORTATION POLICIES, Cont'd

Policy 2.78

Support the provision of limousine, rapid transit and helicopter services from Berkeley and Oakland to the Oakland and San Francisco International Airports.

IV. CIRCULATION PLAN MAP

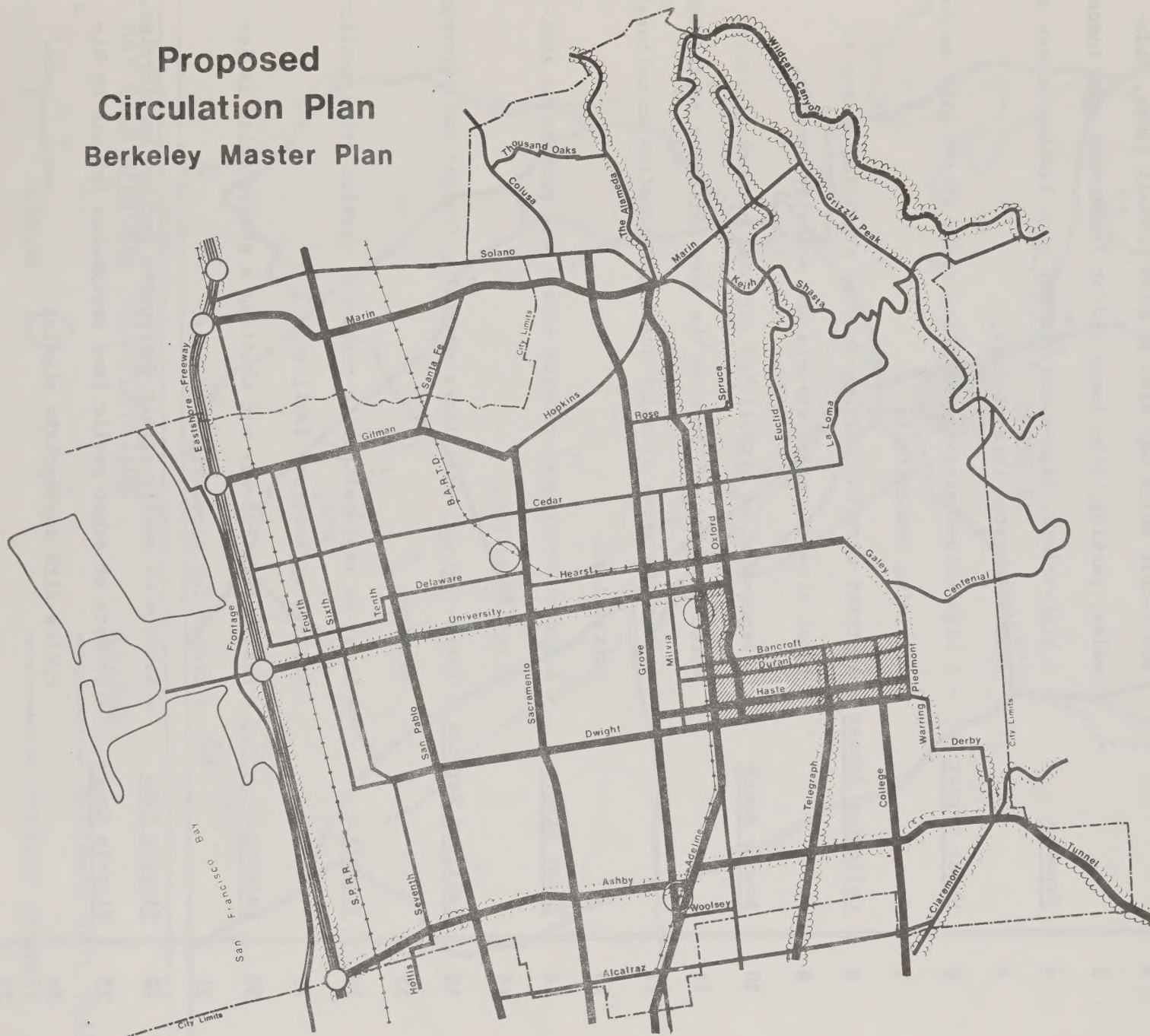
INTRODUCTION

1 The transportation policies establish priorities, standards and criteria
2 for the movement of goods and persons and the utilization of public rights-of-
3 way. The Circulation Map locates the major circulation elements planned -
4 major streets, collector streets, scenic routes, freeways and interchanges,
5 rail lines and rapid transit stations. The area immediately south and west of
6 the University of California campus is presently under study. The circulation
7 pattern for this area will be included in the plan when the study is completed
8 and action taken on its findings.

V. APPENDIX

- 1 - Definitions - Transportation Element
- 2 - Bay Area Regional Transportation - 1973
- 3 - Berkeley Bikeways - Plan for Complete Network - 1971
- 4 - Berkeley Bikeways - Phase I - 1972
- 5 - Pathway Network - Map & Description
- 6 - Traffic Volumes - Berkeley - 1972

Proposed Circulation Plan Berkeley Master Plan



Legend

-  Major Street
-  Collector Street
-  Scenic Route
-  Area Under Study
-  Freeway and Interchange
-  Rail Lines
-  B.A.R.T.D. Station

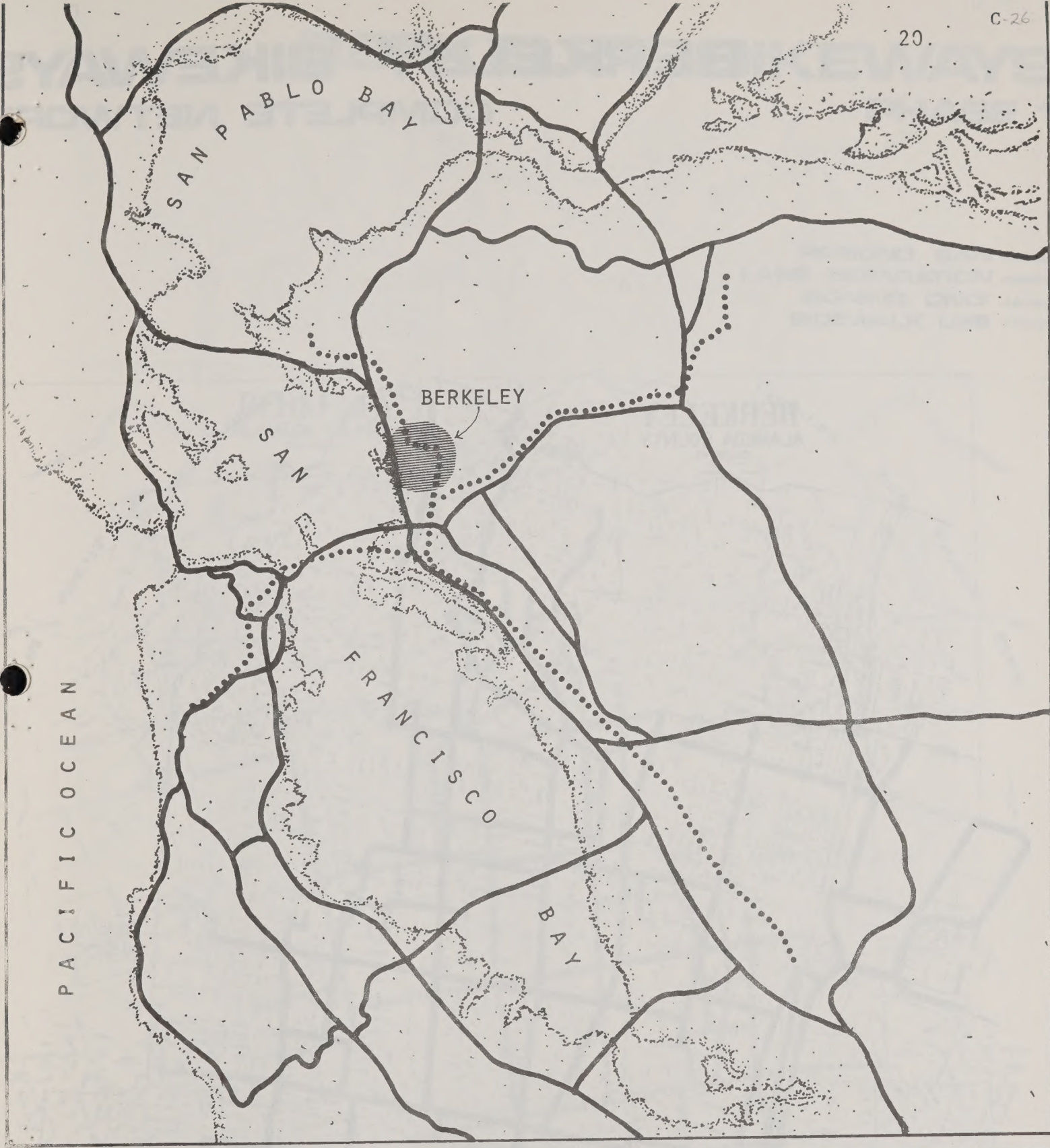
SCALE IN FEET
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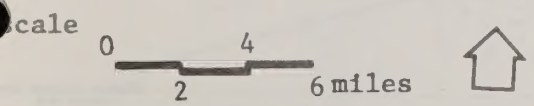
Prepared by the Comprehensive Planning Department July 1976

DEFINITIONS - TRANSPORTATION ELEMENT

- 1 Street - A public right-of-way intended for the movement of goods
2 and people which may also provide transit lanes, side-
3 walks, parking, bike lanes and/or landscaped open space.
- 4 Freeway - A high-volume, high-speed roadway with limited access and
5 grade-separated interchanges.
- 6 Major Street - A high-volume street connecting areas of the city and/or
7 adjoining communities.
- 8 Collector Street - A street carrying varying volumes providing access to
9 local streets, major streets and activity centers.
- 10 Scenic Route - A segment of an established regional network of routes
11 which traverse or provide the most efficient routes to
12 or between areas of major scenic, recreation or cultural
13 attractions.
- 14 Local Street - A street serving to provide access and parking to abut-
15 ting properties.
- 16 Railroad Service - Inter-regional rail lines providing freight and passenger
17 service.
- 18 Transit - Local or regional public passenger service using public
19 streets or separate facilities.
- 20 Pathway - Public right-of-way not abutting a street which is in-
21 tended for pedestrian use only.
- 22 Bicycle Lane - Section of public street designated for use by bicycles.
- 23 Bicycle Route - Streets or other public land designated for use by bi-
24 cycles with appropriate signing.
- 25
26
27



BAY AREA REGIONAL TRANSPORTATION

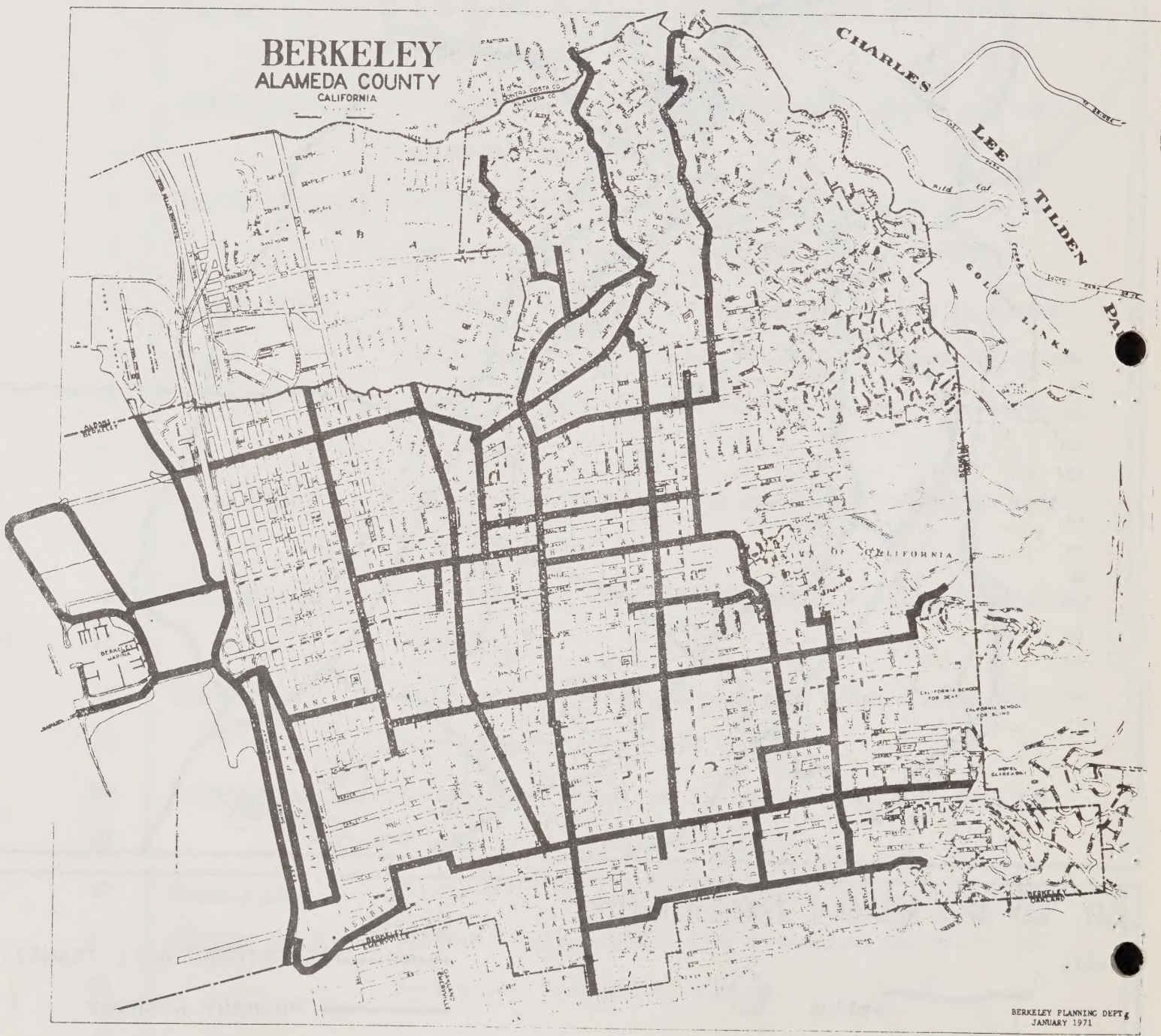


- LEGEND
- REGIONAL RAIL TRANSIT
 - PRIMARY HIGHWAY

Source: Metropolitan Transportation Commission. 1973.

BERKELEY BIKEWAYS

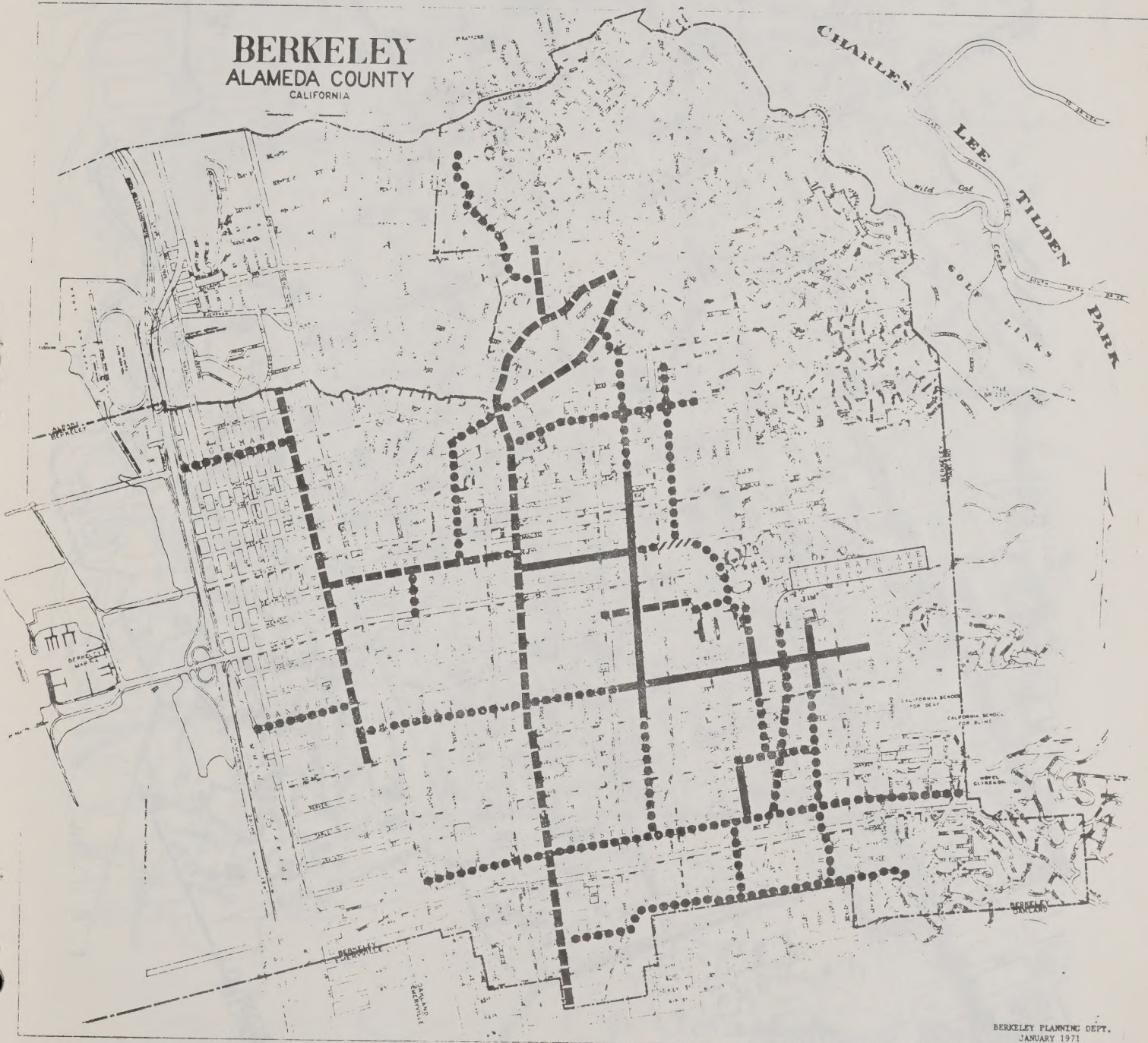
COMPLETE NETWORK



BERKELEY BIKEWAYS

PHASE 1

PARKING BAN ———
LANE SEPARATION ———
SIGNING ONLY
SIDEWALK USE //

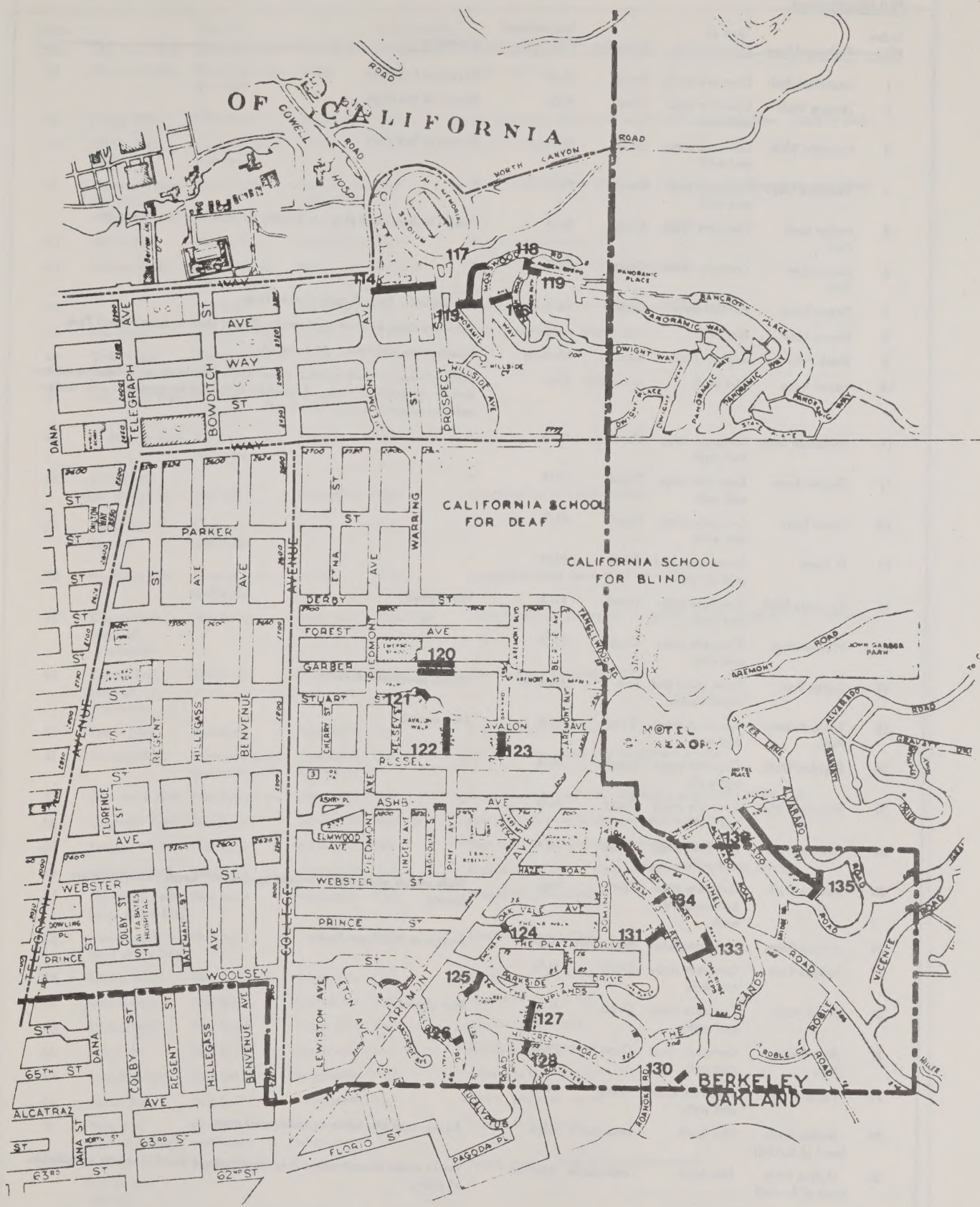


BERKELEY PLANNING DEPT.
JANUARY 1971



- Bus Routes
- Existing Pathways
- Pathways Dedicated but not Constructed
- Recommended New Pathways
- Pathway Numbers Refer to the Foldout Inventory Table

Northeast Berkeley Pathway Network



Existing Pathways
Pathway Numbers Refer to
the Foldout Inventory Table

Southeast Berkeley Pathway Network

PATHWAY NETWORK INVENTORY

C

Hill Neighborhood

Index No.	Pathway Name	Type of Construction	Condition	Improvement Priority	Comments
1	Keoncrest Path	Concrete Walk	Good	N/A	Access to bus stops
2	Terrace Walk	Concrete steps and walk	Good	N/A	Access to bus stops
3	Fountain Walk	Concrete steps and walk	Good	N/A	Access to bus stops
4	Yosemite Steps	Concrete steps and walk	Good	N/A	-
5	Indian Rock Path	Concrete Walk	Good	N/A	Access to buses and shops at Solano Avenue and The Alameda.
6	Mendocino Path	Concrete Walk	Good	N/A	-
7	Devon Lane	Asphalt walk	Good	N/A	Not signed. Part of John Hinkel Park.
8	Devon Lane	Not built	Impossible	Medium	Concrete steps exist at north end. Would lead to John Hinkel Park.
9	Black Path	Asphalt Walk	Uneven	Medium	Needs to be repaved. Not signed.
10	Laurel Lane	Not built	Impossible	High	Right-of-way follows wooded creek bed. Would be an attractive extension of John Hinkel Park. Should be extended by easement over undeveloped property to San Luis Road.
11	Tunbridge Lane	Concrete steps and walk	Good	N/A	-
12	Chester Lane	Concrete steps and walk	Good	N/A	-
13	Upton Lane	Concrete steps and walk	Good	N/A	-
14	El Paseo	Stone steps and asphalt walk	Good	N/A	-
15	Vincente Walk	Concrete steps and walk	Good	N/A	Not signed.
16	Visalia Steps	Concrete steps and walk	Good	N/A	-
17	Indian Trail	Stone steps and asphalt walk	Fair	Medium	Needs pavement repair.
18	Santa Barbara Path	Concrete steps and walk	Good	N/A	Not signed.
20	Boynnton Walk	Concrete steps and walk	Good	N/A	-
21	Maryland Walk	Concrete steps and walk	Good	N/A	-
22	Florida Walk	Concrete steps and walk	Good	N/A	-
23	Acacia Walk	Concrete steps and unpaved walk	Fair	High	Walk muddy when wet. Should be paved. Leads to bus stops on Spruce.
24	Acacia Steps	Not completed	Impossible	High	Access to Michigan Park.
25	Holmes Path	Concrete steps and walk	Good	N/A	-
26	North Path	Concrete steps and walk	Good	N/A	Not signed.
27	Alto Vista Path	Concrete steps and walk	Good	N/A	-
28	Poplar Path	Concrete steps and walk	Good	N/A	-
30	Halkin Walk (west of Euclid)	Not built	Impossible	High	Access from bus route to residential area.
31	Halkin Walk (east of Euclid)	Not built	Impossible	Medium	Partly undeveloped area. Any development should include completion of path.
32	Keeler Walk	Not built	Impossible	High	Important bus access pathway.
33	Rock Walk	Concrete steps and walk	Good	N/A	-
34	-	Not built	Impossible	Medium	Provides park access. Part constructed for housing access.
35	Vistamont Ave. (Rosemont to Sunset)	Not built	Impossible when wet	High	An important element in neighborhood circulation. Part built as driveway. Should be completed as asphalt or gravel trail.
36	Easter Way	Concrete steps and walk	Good	N/A	Leads to bus stops on Euclid.

PATHWAY NETWORK INVENTORY

Index No.	Pathway Name	Type of Construction	Condition	Improvement Priority	Comments
37	Pinnacle Path	Concrete steps and walk	Good	N/A	Sign missing.
38	Poppy Path	Not Built	Impassable	High	An important element of neighborhood circulation. Leads to park.
40	Billie Jean Walk	Concrete steps and walk	Good	N/A	Sign missing.
41	Keeler Avenue (Sterling to Poppy)	Earth Trail	Fair, muddy when wet	High	Street ROW crosses slide area. Existing trail should be gravelled.
42	Miller Path	Not built	Impassable	High	Access to bus route.
43	Latham Walk	Wooden steps Gravel walk	Fair	Medium	Access to bus stops. Not signed.
44	-	Not built	Impassable	High	Access to bus route and link to Miller Path.
45	The Short Cut	Concrete walk	Good	N/A	Not signed.
46	Oak Street Path	Concrete steps and walk	Good	N/A	-
47	Bret Harte Way	Concrete steps and walk	Good	N/A	-
48	El Mirador Path	Concrete steps and walk	Good	N/A	-
50	El Mirador (east of Keith)	Not built	Impassable	High	Continuation of existing path.
51	Redwood Terroce	Concrete steps and walk	Good	N/A	-
52	Martinez Path	Concrete steps and walk	Good	N/A	Appears to have been built recently.
53	Covert Path (west of Cragmont)	Not built	Impassable	Very High	Very attractive alignment in canyon. Should be built as amenity.
54	Covert Path (east of Cragmont)	Not built	Impassable	High	Continuation of Covert Path.
55	Twain Way	Not built	Impassable	High	A significant short cut.
56	Sterling Path	Concrete steps and earth path	Impassable when wet	High	Pave path for safety and to prevent erosion.
57	Bret Harte Path	Not completed	Impassable	High	A significant short cut. Concrete steps built at west end.
58	Cragmont Path	Not built.	Impassable	Medium	Part of unbuilt neighborhood path system.
59	Eleanor Walk	Not built	earth trail	Low	Part landscaped and used as house access.
60	Whitaker Path	Not built	Impassable	High	A potentially useful route. Access to Hillside School.
61	Stevenson Path (west of Sterling)	Not built	Impassable	High	Should be completed.
62	Stevenson Path (east of Sterling)	Not built	Impassable	High	Should be completed.
63	Shasta Walk	Not built	Impassable	High	Should be completed.
64	Shasta Path	Not built	Impassable	High	Should be completed.
65	Tilden Path	Not built	Impassable	High	Access to bus route.
66	Hill Path	Not built	Impassable	Low	Precipitous alignment.
67	Stoddard Path	Not built	Impassable	High	Access to bus route.
68	Twain Path	Not built	Impassable	High	Part of pathway system.
70	Twin Path (east of Miller)	Not built earth path	Impassable when wet	High	Access to bus route.
71	- (Sterling to Miller)	Not built	Impassable	High	Needs name. Part of bus access route.
72	- (Miller to Grizzly)	Not built	Impassable when wet	High	Needs name. Appears to be part of adjoining garden. Leads to bus stops.
73	- (Muir to Woodside)	Wooden Tie steps, gravel walk (west) asphalt walk, (east)	Gravel, eroding	Medium	Needs name.
74	- (Woodside to Wildcat)	Not built	Impassable	Medium	Needs name. Leads to Tilden Park.

PATHWAY NETWORK INVENTORY

C

Index No.	Pathway Name	Type of Construction	Condition	Improvement Priority	Comments
75	Access to Crescent Park	Asphalt Walk (south and east)	Gravel, eroding wooden tie steps and earth (north)	Medium	Needs name.
76	- (Park Hills to Woodside)	Wooden tie steps & earth walk	some steps rotting	High	76, 77, 78. This sequence of pathways needs minor maintenance to steps, and paving with asphalt or gravel. There is also a need for a name and signing.
77	- (Woodside to Hillview)	Wooden tie steps & earth walk	muddy	High	
78	- (Hillview to Wildcat)	Wooden tie steps & earth walk	needs step repair	High	
80	- (Park Hills to Wildcat)	Not built	Impassable	Low	Needs name. Area still undeveloped.
81	Atlas Path	Not built	Impassable	High	Access to bus route.
82	Glendale Path (east)	Not completed. east end, asphalt when wet	rest earth	High	Glendale forms a direct east-west route in an area of circuitous streets.
83	Glendale Path (middle)	Not built, earth path	Impassable when wet	High	Glendale forms a direct east-west route in an area of circuitous streets.
84	Glendale Path (west)	Not built	Impassable	High	Glendale forms a direct east-west route in an area of circuitous streets.
85	La Loma Path	Not built	Impossible	High	-
86	- Delmar to Glendale	Not Built	Impassable	Medium	ROW very steep. Reduces path priority. Needs name.
87	Parnassus Path	Not built. Undefined earth path in woods	Impassable when wet	High	See recommendation 3.
88	Columbia Path	Not built	Impassable	High	Part of neighborhood pathway system.
90	Columbia Walk	Not built	Impassable	High	Access to bus route.
91	Grizzly Path	Not built	Open hill-side, impassable when wet	Medium	Park and bus access in area of low development.
92	Summit Path	Not built	Impassable	High	Park and buss access, major shortcut.
93	-	Not built	Impassable	Medium	Access to bus route
94	Harding Path	Not built	Impassable	High	Leads to campus perimeter trail. (Recommendation 3)
95	Wilson Path	Not built	Impassable when wet	High	Leads to campus perimeter trail. (Recommendation 3)
96	Wilson Walk	Not built	Impassable		Leads to campus perimeter trail. (Recommendation 3)
<u>Hillside Neighborhood</u>					
97	Berryman Path Shattuck to Spruce	Rock and broken concrete steps. asphalt walk	Good	N/A	Sign needed at Spruce.
98	Hawthorne Steps	Concrete steps	Good	N/A	Sign needed at top end.
99	alley, Rose to Glen	Concrete alley not completed at north end	north end impassable	Low	Would need steps.
100	Tamalpais path	Concrete steps and walk	Good, except for mud by creek	N/A	Has 199 steps!
102	Rose Walk	Ornate concrete steps and walk	Good	N/A	Elaborately landscaped.
103	La Loma Steps	Ornate brick steps and walk	Good	N/A	Landscaping includes vine trellis over walk.
104	Rose Steps (to LaLoma)	Concrete steps	Good	N/A	Not signed
105	Vine Lane	Concrete steps and asphalt walk	Good	N/A	-

Northgate Neighborhood

Index No.	Pathway Name	Type of Construction	Condition	Improvement Priority	Comments
107	Cedar Street (La Loma to La Vereda)	Not built	earth trail, impassable when wet	Medium	Not an important link.
108	Hilgard Street (La Loma to La Vereda)	Not built	house access and earth trail	High	Ties into campus perimeter trail. (Recommendation 3)
110	Le Conte Ave. (east of Highland)	Not built	Impassable	High	Ties into campus perimeter trail. (Recommendation 3)
111	Highland Place (north end)	Not built	Impassable	High	Ties into campus perimeter trail. (Recommendation 3)
112	Le Roy Steps	Concrete steps and walk	Good	N/A	-

South Campus Neighborhood

114	Bancroft Way (Prospect to Piedmont)	Ornate concrete steps and walk	Good	N/A	Not signed.
115	Orchard Lane (Panoramic to Mosswood)	Ornate concrete steps and brick pavement	Good	N/A	-
116	Orchard Lane (Mosswood to Arden)	Concrete steps and walk	Good	N/A	166 steps, not signed at Mosswood
117	- (Mosswood to Orchard)	Earth pathway	Fair	Medium	Needs name, signing and gravel or asphalt paving.
118	Arden steps	Concrete steps	Good	N/A	101 steps
119	Arden path	Concrete and wood steps. Asphalt walk	Fair	High	Asphalt path damaged by EB MUD operations, needs repair. Top end not signed.

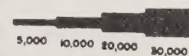
Claremont Elmwood Neighborhood

120	Garber Street (Piedmont to Oak Knoll)	Concrete walks	Good	N/A	-
121	Avalon Walk	Concrete steps and walk	Good	N/A	Not signed at the west end.
122	Pine Path	Concrete steps and walk	Good	N/A	-
123	Oak Knoll Path	Concrete walk	Good	N/A	Not signed.
124	Encina Walk	Concrete walk	Good	N/A	Only 3 feet wide.
125	The Footway	Concrete steps and walk	Good	N/A	Not signed.
126	The Stepps	Concrete steps and walk	Good	N/A	-
127	The Crossways	Asphalt walk	Good	N/A	-
128	The South Crossways	Concrete steps walk	Good	N/A	-
130	- (at El Camino cul de sac)	Concrete walk	Good	N/A	Needs name, not signed.
131	The Cutoff	Concrete steps & asphalt walk	Good	N/A	-
132	Oakridge Path	Concrete steps asphalt/concrete walk	Good	N/A	Not signed.
133	Oakridge steps	Concrete steps and walk	Good	N/A	Not signed at top.
134	Park Path	Concrete steps & asphalt walk	Good	N/A	Not signed.
135	Willow Walk	Stone or concrete steps, asphalt walk	Good	N/A	-
136	Sunset Trail	Asphalt	Good	N/A	-

C-35



24 HOUR TRAFFIC VOLUMES ·

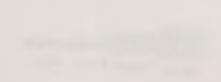


OPEN SPACE, CONSERVATION
AND RECREATION ELEMENT

DEPT. OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
LAND RECREATION ELEMENT

1872

U.S. GEOLOGICAL SURVEY



D. OPEN SPACE, CONSERVATION, AND RECREATION ELEMENT

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IV. OTHER STATE, COMMUNITY, AND RECREATION ELEMENTS

The following elements are included in the study area:

- 1. State Parks and Recreation Areas
- 2. Community Parks and Recreation Areas
- 3. Private Parks and Recreation Areas
- 4. State and Federal Lands
- 5. State and Federal Buildings
- 6. State and Federal Highways
- 7. State and Federal Airports
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- 14. State and Federal National Monuments
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- 16. State and Federal National Historic Sites
- 17. State and Federal National Historic Trails
- 18. State and Federal National Historic Parks
- 19. State and Federal National Historic Monuments
- 20. State and Federal National Historic Landmarks

These elements are included in the study area for the purpose of providing a comprehensive view of the state's recreational resources.

INTRODUCTION

1 Early Berkeley residents were farsighted enough to acquire sites for
2 parks and recreation throughout the City. But, Berkeley's rapid growth
3 during the first half of this century has left very little land in its
4 "natural" state. Now, with increased leisure time and diminution of re-
5 sources, many Berkeleyans are becoming increasingly concerned about main-
6 taining adequate areas for recreation purposes and about conserving re-
7 maining natural resource areas. The combined Open Space/Conservation/
8 Recreation Element reflects these concerns and the interdependence of natural
9 resources and manmade resources. The Element has relationships to the over-
10 all Master Plan goals of preserving Berkeley's character and promoting
11 community safety.

12 DEFINITION OF TERMS

13 Literally speaking, Open Space is any land or water which is not built
14 on. More broadly, open space may be a traditional recreation area or a
15 vista of the Bay. It may be privately or publicly owned. Open space can
16 enhance and protect natural resources: air, water, soil, plants and animals;
17 and it can affect people, economic development decisions, employment, housing
18 and real estate.

19 Open space has several functions:

- 20 1) Public health and safety (flood plains, fire hazard
21 areas, etc.);
- 22 2) Preservation of natural resources (plant and animal
23 life, areas for ecologic study, streams, bays, etc.);
- 24 3) Outdoor recreation (parks, scenic easements, etc.);
- 25 4) Managed production of resources (forests, farms, major
26 mineral deposits, commercial fisheries).

INTRODUCTION

DEFINITION OF TERMS, Cont'd

1 Conservation, is "the planned management, preparation and wise utiliza-
2 tion of natural resources. The objective of conservation is to prevent the
3 wasteful exploitation, destruction or neglect of these resources." Under
4 this concept, conservation is more than "letting nature take its own course."
5 Rather, conservation requires positive acts to preserve natural areas. The
6 object is to insure that future generations will have the same, or enhanced,
7 opportunity to enjoy natural resources as does the present generation.

8 Recreation is an activity in which a person "recreates" his physical
9 and emotional well-being. Any activity a person chooses during his leisure
10 time, whether reading a book, dancing, playing basketball, sitting on a park
11 bench, hiking, etc., is recreation. Recreation activities generate the need
12 for both open space and specialized buildings.

FORMAT OF THE ELEMENT

15 State law requires that each City's General Plan contain:

16 1) A Conservation Element which discusses utilizing and
17 preserving natural resources;

18 2) An Open Space Element which outlines policies and
19 programs for conserving and preserving open space lands.

20 In addition, a Recreation Element which deals with park and recreation
21 areas may be prepared. Obviously, there is much overlap and duplication
22 among the three elements. Consequently, they can often be discussed together
23 and represent different ways of looking at the same resource or community
24 development need.

INTRODUCTION

DEFINITION OF TERMS, Cont'd

1 This Element will discuss both manmade and natural resources through an
2 inventory and evaluation of their existing conditions. During this dis-
3 cussion, open space, conservation and recreation issues, problems and
4 opportunities will be presented. Policies are developed which encourage
5 solutions to the identified problems and encourage ways to take advantage
6 of opportunities as they arise or exist.

7 Like other Master Plan Elements, this Element is not intended as a
8 specific plan. Rather, the Element should be looked at as a beginning point
9 from which more detailed proposals may be developed. The Element provides
10 a framework for decisions which can lead to specific projects.

EXISTING CONDITIONS

NATURAL RESOURCES

1 Natural resources include among other things--water resources, air
2 resources, plant life and animal life. Although Berkeley is fairly completely
3 developed, her important assets include natural as well as manmade resources.
4 This section will describe several natural resources and discuss issues
5 related to each resource.

Air Resources

7 While other natural resources can be discussed specifically for Berkeley,
8 air quality needs to be placed in a regional context. The San Francisco
9 Bay Area Air Basin is classified by the California Air Resources Board as a
10 region having a "critical" air pollution problem. The criteria used for this
11 classification was the ability to meet national standards by 1975. Of the
12 total emissions in the Region, over 50% of the hydrocarbons, approximately 90%
13 of the carbon monoxide emissions, are generated by motor vehicles.

14 Although Berkeley has relatively high air quality when compared to other
15 cities in the Bay Area (See Table 1), state ambient air quality standards
16 have been exceeded for most pollutants enough times to indicate that air pollu-
17 tion exists in Berkeley at certain times of the year.

18 Information on Berkeley air quality is derived from measurements taken
19 at Richmond, since levels of most air pollutants do not vary greatly from one
20 nearby area to another. Wind and topographic influences can be used as adjust-
21 ment factors to estimate pollutant levels in Berkeley from those observed in
22 Richmond.

23 Between the years 1969 and 1972, levels of air pollution have shown signi-
24 ficant improvement in the Bay Area and Berkeley (as inferred from analysis of
25 Richmond data). The number of days state standards for sulfur dioxide were
26
27

EXISTING CONDITIONS

NATURAL RESOURCES

'Air Resources, Cont'd

1 exceeded at Richmond fell from 12 in 1969 to two in 1972 while oxidant, ni-
2 trogen dioxide and suspended particulates (any matter dispersed in the air,
3 whether solid or liquid in which the individual particles are larger than
4 small molecules but smaller in diameter than 500m [one m = one millionth of
5 a meter]) also decreased by at least one half.

6 Berkeley is situated in one of the mildest climatic regions in North
7 America in which the climatic factors seldom reach extremes. The prevailing
8 westerly winds keep Berkeley well ventilated except when a layer of rela-
9 tively cool air near the ground is trapped beneath a layer of warmer air
10 causing what is known as a "temperature inversion." Smog or air pollution
11 becomes more noticeable during these "temperature inversions."

12 The primary source of air pollution in Berkeley and the Bay Area comes
13 from trucks, automobiles, buses and other gasoline burning vehicles. Other
14 minor sources include factories and fuel burning electric plants. These
15 sources have effects on the health of some Berkeleyans in terms of respiratory
16 diseases and eye irritants. Plant life may be negatively affected as well.
17 Yet the quality of air in Berkeley is improving. The City can aid in these
18 trends by cooperating with national, state and regional regulatory agencies,
19 through attempts to reduce dependence on the automobile for many trips by
20 increasing public transit and land use planning to decrease distances between
21 places of residence, shopping and employment.

Water Resources

22 Berkeley's natural water resources consist of San Francisco Bay, Aquatic
23 Park and several creeks. Manmade water resources consist of several reser-
24 voirs which are operated by the East Bay Municipal Utilities District. San
25
26
27

TABLE 1

AIR POLLUTION IN THE BAY AREA BY STATION AND CONTAMINANT: 1974

For oxidant and for nitrogen dioxide, "max" is the highest hourly average value expressed in part per hundred million. For carbon monoxide, "max" is highest 8-hour average value in parts per million. (The one-hour standard for CO was never exceeded during the year.)

For sulfur dioxide, "max" is highest 24-hour average value expressed in parts per million. For total suspended particulates (TSP), "mean" is annual geometric mean in micrograms per cubic meter.

Stations	Ox Max.	*1	**2	CO Max.	*	NO ₂ Max.	*	SO ₂ Max.	+	TSP Mean	***
San Francisco	14	4	4	9.9	2	16	0	.070	0	57	6.0
San Rafael	12	2	8	8.1	0	17	0	.015	0	39	2.5
Richmond	11	1	1	7.0	0	15	0	.041	0	45	1.7
Pittsburg	15	21	30	7.0	0	11	0	.028	0	50	5.0
Concord	16	20	35	9.2	1	20	0	.021	0	46	5.0
Walnut Creek	15	18	31	—	—	—	—	—	—	—	—
Oakland	13	3	6	9.5	1	25	1	—	—	—	—
San Leandro	18	20	31	—	—	—	—	—	—	—	—
Hayward	23	35	48	—	—	—	—	—	—	—	—
Fremont	22	41	61	7.6	0	19	0	.012	0	57	9.2
Livermore	28	83	93	6.4	0	18	0	.006	0	74	28.2
San Jose	28	69	87	16.9	14	30	4	.016	0	59	12.0
Alum Rock (NS)	24	77	96	—	—	—	—	—	—	—	—
Gilroy (NS)	17	44	63	5.9	0	13	0	.004	0	—	—
Los Gatos	25	53	69	—	—	—	—	—	—	—	—
Sunnyvale	18	31	46	9.1	2	31	3	.008	0	41	2.5
Mountain View	15	15	18	—	—	—	—	—	—	—	—
Redwood City	18	11	20	8.8	0	33	2	.017	0	50	5.8
Burlingame	16	10	18	9.8	2	—	—	.038	0	39	0.8
Petaluma	14	10	13	—	—	—	—	—	—	—	—
Santa Rosa	10	4	6	8.0	0	15	0	.006	0	43	2.6
Napa	13	22	32	10.1	1	14	0	.019	0	59	6.7
Vallejo	16	22	28	11.9	14	14	0	.015	0	61	14.3
Fairfield	15	26	38	—	—	—	—	—	—	—	—

(NS) Indicates new station, activated during 1974.

* Number of days ambient air quality standard was exceeded. *1 State oxidant standard ≥ 10 pphm. **2 Federal oxidant standard > 8 pphm.

+ Percent of observed days when State air quality standard was exceeded.

*** Percent of observed days when State air quality standard (100 $\mu\text{g}/\text{m}^3$ for 24 hours) was exceeded.

EXISTING CONDITIONS

NATURAL RESOURCES

1 Water Resources, Cont'd

2 Francisco Bay is the primary water resource for Berkeley in that it provides
3 scenic and recreational opportunities and habitat for various forms of plant
4 and animal life. Berkeley's Bay Shoreline is either developed for recreation/
5 commercial purposes or is undeveloped. Actually, the present shoreline is
6 the result of decades of dredging and filling the Bay for industrial uses,
7 the Eastshore Highway and the Marina and of diked areas utilized as a
8 repository for solid waste. Berkeley has opposed further non-essential fill
9 of the San Francisco Bay since 1963.

10 Aquatic Park receives its water from San Francisco Bay and in fact was
11 created from the Bay when the Eastshore Highways were constructed. The Park
12 contains 99 acres and is intensively used for such recreational purposes as
13 water skiing, picnicking and boating. The lake at Aquatic Park offers Berk-
14 eleyans a unique close-at-hand resource which should be retained and improved.

15 Berkeley has very few creeks left in a "natural" state. Those creeks
16 which are partially open include Strawberry Creek, Codornices Creek and
17 Harwood Creek. With the exception of Strawberry Creek which flows through
18 the Central UC Campus and Codornices Creek which flows through Live Oak Park,
19 partially open creeks have limited accessibility. Many creeks now flow in
20 culverts since buildings, streets, etc., have been placed over them. Those
21 creeks which remain partially open can provide a visual contrast to the sur-
22 rounding urban development and can support a variety of plant and animal
23 life. There are various methods to preserve the natural character of Berk-
24 eley's partially open creeks. Essentially the most appropriate concept for
25 Berkeley involves using the existing open channel, modifying it where necessary
26 for erosion control. Such devices as native plants, sandbagging or retaining
27 walls in carefully selected places are appropriate.

28

EXISTING CONDITIONS

NATURAL RESOURCES

Water Resources, Cont'd

1 The quality of Berkeley's water resources varies from standard to above
2 standard. The Environmental Health Division of the Berkeley Health Department
3 monitors the quality of water in Aquatic Park on a regular basis (approx-
4 imately once a month in winter, three times a week in summer). Significant
5 improvements have been made in the quality of Aquatic Park water during the
6 last few years. In 1969, prior to the harvesting of algae, the chloroform
7 count at Aquatic Park was 2300 per hundred millileter. In 1975, the count
8 was between two and 23 per hundred milliliters with the state standard being
9 1000 per hundred milliliters.

Plant and Animal Life

11 Plants and animals contribute many beneficial aspects to Berkeley's
12 environment. Plants clean and condition the air, reduce noise, provide shade
13 and beauty and serve as a habitat for insects, birds and other species.

14 Animals are part of the ecological cycle in which organisms help to support
15 other organisms.

16 Information about plant life within the City of Berkeley is sparse and
17 is not available in any concise publication. However, most of Berkeley is
18 a habitat for introduced, rather than native plant species. These plants
19 include several varieties of street trees and a wide variety of domestic
20 plants. A 1972 study revealed many different street tree species ranging
21 from several varieties of eucalyptus to honey locust and madrone trees.
22 These trees are found throughout Berkeley. However, some streets in both the
23 hills and the "flatlands" do not have street trees.

EXISTING CONDITIONS

NATURAL RESOURCES

Plant and Animal Life, Cont'd

1 The severe freeze which occurred during the 1972-73 winter severely
2 damaged many Eucalyptus trees in the ridglands above Berkeley. Since these
3 partially dead trees presented a fire hazard, approximately 200,000 were
4 removed. If native trees such as redwoods, bay, oaks and buckeye were used
5 as replacements, the area would be less susceptible to fire hazards.

6 Trees within cities create a modest need for pest management. Since most
7 trees are planted near residences, pesticides should be selected which minimize
8 hazards to people and property. In addition, the spraying of insect pests fre-
9 quently means killing, directly or indirectly, various bird species and bene-
10 ficial insects. The propensity to use non-native plants may create problems
11 because some insect species may come with the plants and without their natural
12 predators.

13 Since most of Berkeley is fully developed, there are only a few major
14 areas where a diversity of wildlife exists. These areas are the Berkeley
15 hills (including Strawberry Canyon), Aquatic Park and the Marina. A few
16 forms of wildlife inhabit the more developed portions of Berkeley such as
17 birds, gophers and salamanders.

18 Several species of wildlife which are found in Berkeley are listed by
19 the California Department of Fish and Game as endangered or rare. The
20 endangered species include the California clapper rail, the California brown
21 pelican and the salt marsh harvest mouse. The rare species are the Alameda
22 County striped racer snake and the California black rail snake. The Cali-
23 fornia brown pelican has been seen in the Marina area as have the salt
24 marsh harvest mouse and clapper rail. The striped racer inhabits areas
25 of chaparral, grassland, open woods and rocky slopes typical of undeveloped
26 portions of the Berkeley hills. The California black rail has not been
27 seen in Berkeley in recent years.

EXISTING CONDITIONS

NATURAL RESOURCES

Plant and Animal Life, Cont'd

1 The Berkeley Hills, especially Strawberry Canyon, contain habitats for
2 many animals. Larger reptiles and mammals such as deer, skunks, raccoons
3 and snakes are found there and have been reported on the U.C. Campus as well
4 as in the Thousand Oaks and North Berkeley areas. Squirrels are common in
5 portions of the City as are arboreal salamanders.

6 Species of fish found off the Marina include bass, perch, flounder,
7 halibut, salmon, jacksmelt, smelt and anchovies. Perch and flounder are
8 the most prevalent species but no data is readily available on population
9 trends over the years or specific numbers of fish. Fishes caught for
10 commercial purposes are principally perch and salmon.

11 According to zoologists, two habitats in Berkeley are areas of critical
12 environmental concern: the open lands near the Marina and the area above
13 the California Schools for the Deaf and Blind. The open fields near the
14 Marina support large numbers of birds and serve as a "wintering" ground for
15 these animals. The undisturbed hillsides near the Schools for the Deaf
16 and Blind and Strawberry Canyon support the last remaining stand of chaparral
17 near the Bay. Habitats within the developed portion of Berkeley while not of
18 critical concern, can be improved by preserving small, intact ecosystems.
19 Zoologists also point out that noise levels from automobiles greatly disturb
20 many species.

EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

This section will discuss components of the park and recreation system in Berkeley and issues, problems and opportunities relating to that system. In order to discuss the Berkeley situation, one must be aware of its relationships to the larger Bay Area Region.

Bay Region System

The Bay Region includes the counties of Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo and San Francisco. The 1970 census showed that this nine-county area which comprises less than five per cent of the state's land area, has more than four and a half million or 23 per cent of the state's population. Persons 18 years of age and younger total about one and one-half million or approximately 32 per cent of the population. Nine per cent of the population represents persons 65 years of age or older. This area has a density of 661 persons per square

EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

Bay Region System, Cont'd

1 mile, which is almost double that of the Los Angeles area, the next most
2 largely populated region of the State.

3 About four percent of the land area within the Bay Region is available
4 for public recreation. There are 45 state-owned park units within this
5 district representing an aggregate open space area of slightly more than
6 72 square miles. Collectively, these units received more than six million
7 visitor days of use in 1969. The Golden Gate National Recreation Area, when
8 fully developed will also be an important recreation attraction.

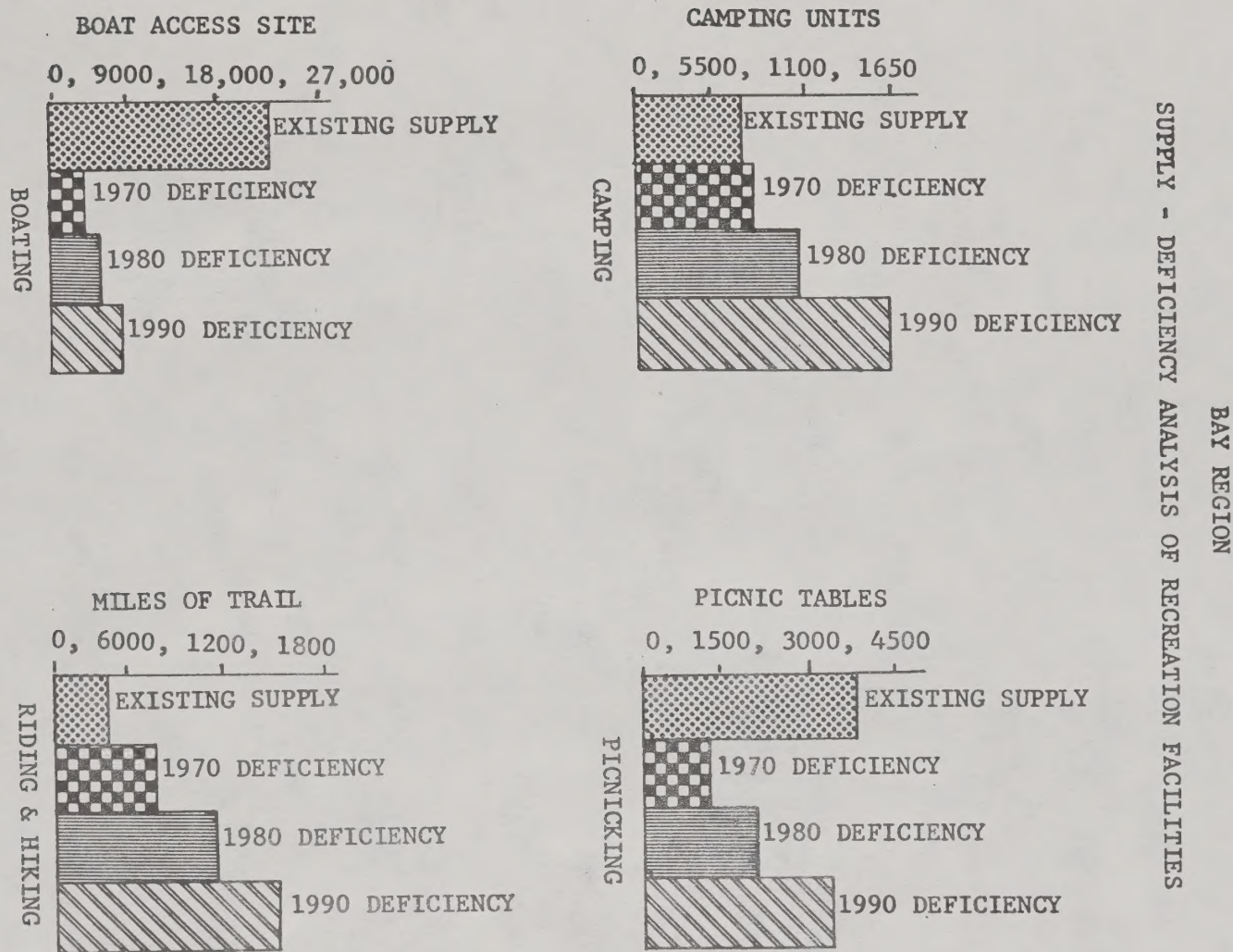
9 It is felt by a number of recreation agencies that many facilities in
10 local parks (e.g., playgrounds) are no longer serving the purpose for which
11 they were originally designed. In addition to the demand for highly struc-
12 tured, highly programmed parks, there is also demand for generally open
13 areas with little development.

14 Recreation concerns in the Bay Area revolve primarily around two
15 related problems: The need to meet acceptable recreation space and facility
16 standards, and the fiscal constraints that apply to both facilities and
17 programs.

18 According to the State Resources Agency, consideration in the Bay Area
19 must be given to unsatisfied recreation demands. These needs and defi-
20 ciencies fall into three categories: 1) recreation close to home; 2) regional
21 day-use opportunities; and 3) overnight-use facilities. (See Figure 1)

22 The least extensive regional open space use has been for recreation.
23 Land and water areas for recreation are distributed throughout the region
24 in seemingly random fashion. (See Table 2) Marin County has the largest
25 amount of land set aside for recreation, which is largely due to the Marin
26
27

FIGURE 1



SOURCE: CALIFORNIA OUTDOOR RECREATION PLAN 1974

T A B L E 2

LAND NOW IN PUBLIC OWNERSHIP IN THE BAY AREA

COUNTY	TARGET SIZE OF THE SYSTEM	TEMPORARILY PRESERVED	PERMANENTLY PRESERVED	DEFICIT IN THE PERMANENTLY PRESERVED LAND	PERCENT OF TARGET NOW PRESERVED
Alameda	423,465	32,677	78,422	345,043	18.5
Contra Costa	307,585	24,108	52,930	253,655	17.5
Marin	277,494	21,409	87,706	189,788	31.6
Napa	399,850	38,722	49,620	350,230	12.4
San Francisco	34,773	1,064	33,718	1,055	97.0
San Mateo	219,605	24,164	60,198	159,206	27.4
Santa Clara	634,899	32,113	34,245	600,654	5.4
Solano	358,500	8,816	59,684	298,816	16.6
Sonoma	781,268	11,295	30,431	750,837	3.9
TOTAL	3,437,243	194,368	487,954	2,949,289	14.2

SOURCE: ABAG Regional Open Space Plan, 1970

EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

Bay Region System, Cont'd

1 Municipal Water District, Point Reyes National Seashore and various others
2 under State control such as Angel Island. The next most significant
3 recreation areas are those of the East Bay Regional Park District and East
4 Bay Municipal Utilities District along the tops of the Berkeley/Oakland
5 hills. These agencies together with the Bay Conservation and Development
6 Commission, regulate or control recreation areas such as Tilden Park which
7 many Berkeleyans use.

8 Measured along the Bay Area shoreline there are approximately 345
9 miles of shoreline frontage. Only 17 miles, or five percent, of the shore-
10 line is used for recreation, with a large part located in Berkeley.

11 Agriculture is currently one of the region's largest land users, how-
12 ever, urban expansion has resulted in changes throughout the region, notably
13 in Santa Clara, Contra Costa and Alameda Counties. Most parts of the region
14 fall below the ratio of park facilities to population recommended for the
15 area by the State of California.

Citywide Park and Recreation System

17 In Berkeley, as in most cities, there are two basic designations of
18 park and recreation systems--city wide and neighborhood.
19 Berkeley's city wide parks are defined by the Park, Recreation and Community
20 Services Department as district, view and large parks.

21 District parks are at least two to three acres of size with either a
22 recreation center, a toilet facility or special-use equipment that will
23 attract intensive use. They may have large fields or natural areas.

24 There are four district parks in Berkeley: Civic Center, Live Oak,
25 Willard and Glendale-LaLoma.
26
27

EXISTING PARK FACILITIES-1975

BERKELEY ALAMEDA COUNTY CALIFORNIA



Berkeley Planning Department
Master Plan Revision Program-1975

STREET NUMBERS:
A street number is marked next to each
number on the map. Most are of streets
shown in the map. Some are of streets
not shown in the map.

PREPARED
CITY OF BERKELEY
DEPARTMENT OF PUBLIC WORKS

EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

Citywide Park and Recreation System, Cont'd

1 View parks are located primarily in the hills. Their topography is
2 such that development is limited to natural or landscaped areas. Since they
3 are in less populated areas, the intensity of use is low. Several view
4 parks have significant acreage in wild foliage, requiring little or no main-
5 tenance. There are five view parks in Berkeley: Cragmont, Indian Rock, John
6 Hinkel, Stoneface and Terrace View.

7 Large parks are five acres or larger. These parks have some areas very
8 intensively used with a variety of recreation facilities. There are two
9 large parks in Berkeley: Codornices and San Pablo. Citywide parks are not
10 evenly distributed throughout the City and the residents of some areas of
11 Berkeley do not have easy access to a citywide facility.

12 In addition, the City of Berkeley operates two family camps: Echo Lake
13 overlooking Lake Tahoe and Toulumme on Highway 120 near Yosemite National
14 Park. Berkeley also operates the Cazadero Music Camp near the Russian River
15 which provides music training for junior and senior high school students and
16 a summer day camp in Tilden Regional Park which provides recreation for
17 children between the ages of seven and 12 years.

18 Numerous pathways cover eastern Berkeley (See Transportation). There
19 is also a series of creeks which originate from the crest of the east hills
20 (See Figure 5). These creeks are generally steep natural channels until
21 they reach the "Flatlands" where in most instances they have been placed
22 underground in culverts to their point of discharge in the Bay.

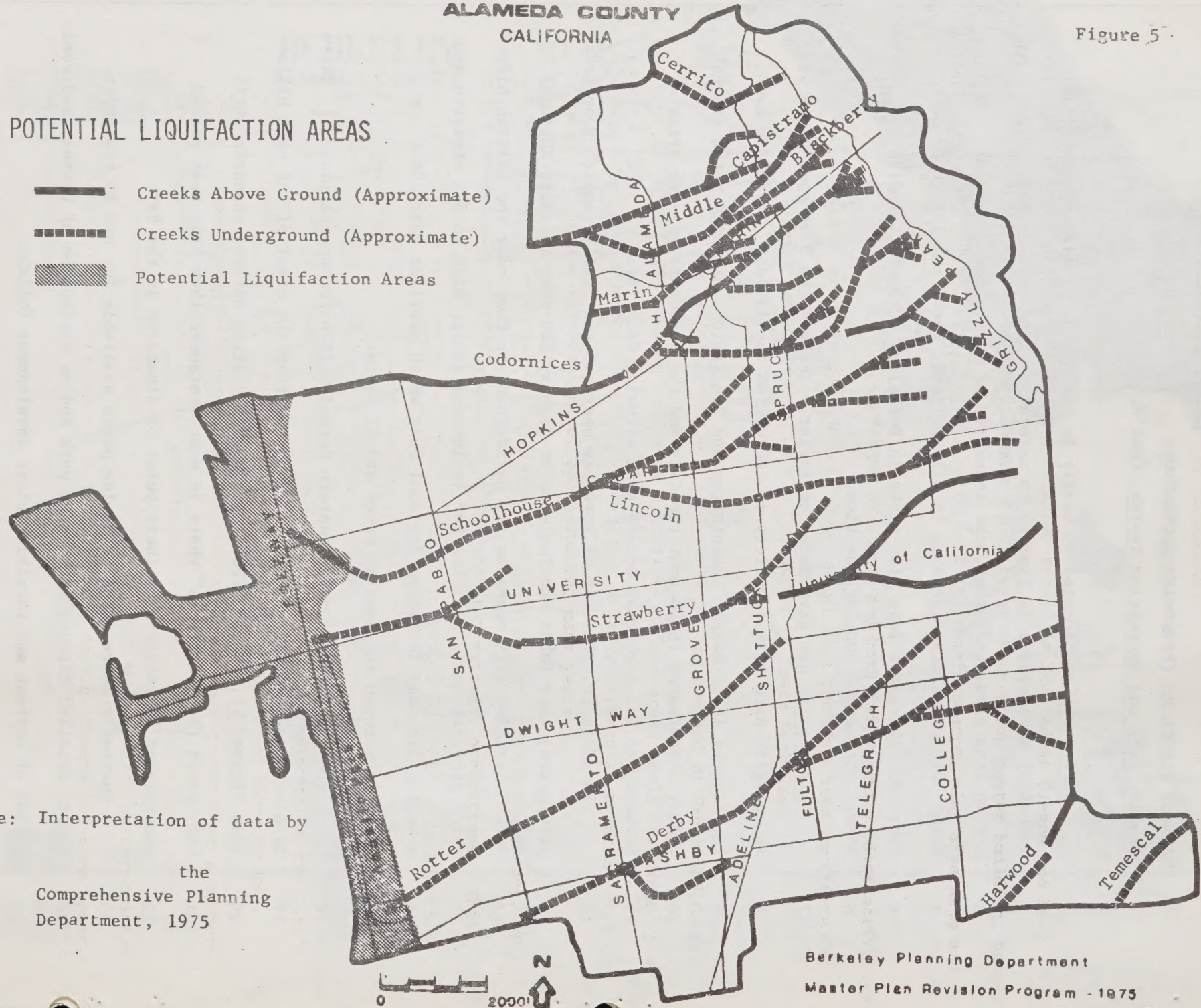
23 Currently there are 13 citywide parks available for use by residents.
24 A more detailed discussion of each park and an evaluation of current and eval-
25 uation of current and possible future development follows.

26

27

POTENTIAL LIQUIFACTION AREAS

-  Creeks Above Ground (Approximate)
-  Creeks Underground (Approximate)
-  Potential Liquifaction Areas



Source: Interpretation of data by
the
Comprehensive Planning
Department, 1975

Berkeley Planning Department
Master Plan Revision Program - 1975

MANMADE RESOURCES (PARKS AND RECREATION)

Citywide Park and Recreation System, Cont'd1. Grove Street Playground

1 The Grove Street Playground contains 2.45 acres, is located at Grove
2 and Russell Streets and provides facilities for tennis, softball, volley-
3 ball and basketball and also has a childrens' play area.

4 There has been discussion about closing Grant Street to permit expansion
5 of the Park along with installation of an indoor swimming pool and creation
6 of a teen center. A community garden has also been discussed. New facilities
7 such as an indoor stage and tot lot should be created to increase programs for
8 senior citizens and young children.

2. Live Oak Park

10 Live Oak Park contains 5.52 acres, is located at Shattuck and Berryman
11 Streets and offers the following facilities: recreation center building,
12 park areas with stream, picnic areas, tiny tot area, basketball, tennis and
13 volleyball courts. Attendance at the park during 1973 and 1974 was 443,234
14 persons at both indoor and outdoor activities. This park is the most
15 heavily utilized in the City, Some of its craft and theatrical activities
16 could be decentralized to other locations.

3. James Kenney Park

18 This park contains 4.06 acres , is located at 8th and Delaware Streets
19 and has the following facilities: recreation center building, baseball fields,
20 small childrens' play area, tennis, shuffleboard, volleyball, basketball
21 court and small grass barbeque area. A new recreation building has been con-
22 structed.

23 During 1973, 200,000 persons attended both indoor and outdoor activities
24 at this park, There are high proportions of both youth and elderly within
25 the surrounding neighborhood and a greater variety of programs for these
26 groups is needed.

EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

Citywide Park and Recreation System, Cont'd4. San Pablo Park

San Pablo Park contains 12.95 acres, is located at Oregon and Park Streets and has the following facilities: Recreation center building, baseball and softball fields, basketball and tennis courts, play apparatus and open play fields.

During 1973, 142,000 persons attended both indoor and outdoor activities at this major South Berkeley Park. A swimming pool has been considered at this park since there are no public pools in South Berkeley.

5. Civic Center Park

Civic Center Park contains 2.77 acres, is located at Grove and Center Streets and has the following facilities: lawn area, small childrens' play area and apparatus and outdoor stage. A large ornamental fountain also exists but has been out of operation for many years.

This park has various outdoor music concerts on summer weekends. This facility could be used to provide outdoor theatrical productions. This park is the open space focus of the Civic Center Complex in addition to serving a recreation function.

6. Bowling Greens

The Bowling Greens contain 1.81 acres, and is located adjacent to the City's Corporation Yard on Acton Street between Allston Way and Bancroft Way. Although in public ownership, the Bowling Greens are operated on a membership basis because of the specialized activity. The potential exists to relocate the Corporation Yard and convert most of the existing Corporation Yard site into park usage incorporating the Bowling Greens for more general public use.

EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

Citywide Park and Recreation System, Cont'd1 7. Willard Park

2 Willard Park contains 2.72 acres, is located at 2700 Hillegass Street
3 and has the following activities: gymnasium and club rooms for scheduled
4 activities, arts and crafts, a tiny tot play area and lighted tennis courts.

5 The Park services many young adults. Active recreation such as hand-
6 ball and basketball should be continued here and open areas for picnicking
7 and frisbee throwing should be retained.

8 8. Aquatic Park

9 The Park contains 99.36 acres, is located South of University Avenue
10 next to State Route 17 and has the following activities: nature area,
11 bird refuge, picnic areas, water skiing activities, "learn to sail" classes
12 and sailboat rentals.

13 The noise generated by the adjacent Eastshore Freeway inhibits the use of
14 this Park. Since it represents more than one half of the total park area of
15 the City, priority should be devoted to mitigating this noise factor.

16 9. John Hinkel Park

17 The Park contains 4.19 acres and is located at Southampton and San
18 Diego Roads and has the following: outdoor amphitheatre, trails, play-
19 ground and a clubhouse for folk and other dancing activities.

20 At the present time, the amphitheatre is open to the public on a reser-
21 vation basis. The City should utilize this facility for meetings, drama
22 productions and other related activities on a more frequent basis.

23 10. Indian Rock Park

24 This ornamental Park contains 1.18 acres, is located at Indian Rock and
25 Shattuck Avenues and is primarily used for rock climbing. Its potential as
26
27

EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

Citywide Park and Recreation System, Cont'd

1 an educational resource for rock climbing and nature study should be
2 emphasized by the Berkeley Unified School District and UC-Berkeley.

3 11. Cragmont Park

4 This Park contains 3.0 acres and is located at Regal Road and Euclid
5 Avenue. It is primarily used as an ornamental park and for rock climbing
6 and should continue in this function.

7 12. Rose Gardens

8 This Park contains 3.54 acres, is located at Euclid Avenue and Bay View
9 Place and has the following activities: rose horticulture and tennis
10 courts. The Park should continue in its present use.

11 13. Codornices Park

12 This Park contains 10.60 acres, is located at 1201 Euclid Avenue and
13 has the following activities: small childrens' play area and apparatus,
14 park area for sports and fireplaces for barbeques.

15 Neighborhood System

16 Berkeley's neighborhood parks are defined as totlots and mini-parks.
17 Totlots are small, approximately one City lot, intensively used areas.
18 They usually have maximum equipment, paved surfaces and minimum turf area.
19 There are two totlots in Berkeley: Prince Street and Roosevelt Street.

20 Mini-parks are small, approximately 20,000 square feet or four typical
21 City lots, intensively used areas. They have some equipment and a signifi-
22 cant turf area. They have more plant material to maintain than totlots and
23 attract an extremeley heavy user population of all age groups, but predo-
24 minately youth and elderly persons. There are four mini-parks in Berkeley:
25 Virginia-McGee (Totland); Berkeley Way; Gregg Brown; and 63rd Street.
26
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EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

Citywide Park and Recreation System, Cont'd

1 The City also operates mobile program units which provide recreation
2 services to vacant lots, school yards, temporarily closed streets, local
3 club houses or designated meeting places during the summer.

U.C. Campus

5 One open space and park/recreation resource which should not be over-
6 looked is the University campus. Occupying 370 acres, the U. C. campus is
7 strategically located near the Central Business District in the center of
8 the eastern part of the City. The University's beautifully landscaped
9 grounds offer a welcome contrast to the high density residential and
10 commercial land uses which surround it. During the 1960's, many new
11 buildings, such as Wurster Hall, were constructed on campus, drastically
12 changing the "open" character of the campus. While few large scale
13 buildings have been built since 1974, it appears that the campus does not
14 have enough vacant land west of Gayley Road to construct many new buildings
15 without further diminishing the quality of the campus as an open space
16 resource for Berkeley residents and University students and personnel.

17 The University's hill lands offer a unique opportunity for ecological
18 study in a major metropolitan area which is not easily duplicated. Some
19 portions of the hill lands are used as forestry research, while others
20 remain in their undeveloped state. These areas, as was discussed earlier,
21 are of critical environmental concern as well as offering opportunities for
22 outdoor recreation.

23 The University Botanical Gardens and the Strawberry Canyon recreation
24 center offer expanded recreation opportunities for Berkeley residents. In
25 1976, the University began a policy to publicize the University Botanical
26
27

EXISTING CONDITIONS

MANMADE RESOURCES (PARKS AND RECREATION)

Citywide Park and Recreation System, Cont'd

1 Gardens as being open to the general public. Similar steps could be taken
2 for the Strawberry Canyon Recreation Center.

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

3
4 While Berkeley has 176 acres of City-owned parks, 99 acres are in
5 Aquatic Park. Other areas of the City have heavily used facilities affected
6 by traffic and other problems. Issues regarding park and recreation in
7 Berkeley include priorities for acquisition and development, park standards,
8 views and public open spaces in new development.

Park Standards

10
11 The State of California and cities in the Bay Area including Berkeley
12 have developed numerical standards to be used in planning recreation areas.
13 The 1955 Berkeley Master Plan contains proposed standards for neighborhood
14 and district recreation parks. These standards were based upon established
15 space requirements, upon distance factors, activities associated with
16 different age groups and national and local experience.

17 The earlier Plan established an optimum size of 4.50 acres for a neigh-
18 borhood recreation park by itself and 9.50 acres for a neighborhood recrea-
19 tion park combined with an elementary school. District recreation parks
20 on individual sites would contain 12.50 acres if located on a separate
21 site, and if combined with a junior high school, would contain 20.25 acres.
22 The Plan proposed five new district recreation parks as expansions of
23 existing facilities: Willard Jr. High School, Garfield (Martin Luther King)
24 and Burban (Berkeley High School West Campus) in addition to Codornices and
25
26
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EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

Park Standards, Cont'd

1 San Pablo Parks. The Plan also proposed 26 neighborhood recreation parks
2 with 13 located at elementary schools. The district facilities were to
3 serve as neighborhood recreation parks for the immediate neighborhood and
4 all school sites except for Berkeley High School were proposed to be
5 developed jointly with recreation facilities. It was apparently felt at
6 that time that with some expansion, school sites could be utilized as park/
7 recreation sites. However, the standards proposed in the 1955 Plan have
8 proven costly to achieve in terms of funding and diminishing the City's
9 housing supply.

10 The California State Outdoor Recreation Plan proposed numerical stand-
11 ards based on the number of acres of park and recreation areas in relation-
12 ship to the total population of a City. The State Plan recommends that a
13 City should provide a total of ten acres of park and recreation area
14 (exclusive of school playgrounds) for each 1,000 residents. Berkeley would
15 have to acquire an additional 950 acres to meet this standard.

16 Oakland has suggested standards based on number of acres per 1,000 popu-
17 lation while Palo Alto has rejected the notion of numerical standards by
18 suggesting a more flexible approach which evaluates the quality, use and
19 demand for recreation facilities in determining additional facility and
20 program needs. In recommending that its City Council adopt a standard of
21 10 acres per 1,000 population, the Oakland Open Space, Conservation and
22 Recreation Element points out that: "Standards which are desirable in the
23 abstract may be next to impossible to achieve in built-up areas like much of
24 Oakland. ...it is better to consider an acreage standard as one measure
25 of the relative deficiency in different areas than as a target which must
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EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

Park Standards, Cont'd

1 be achieved." The Oakland Plan argues for a flexible approach in fully
2 developed areas which would allow for acquisition of vacant lands at a
3 reasonable cost with emphasis on such alternatives to land acquisition as
4 making more intensive use of existing park and recreation areas, making
5 recreational use of streets and of local spaces and by providing better access
6 to increased facilities at regional and citywide parks.

7 Clearly the State Standard of ten acres of park and recreation per 1,000
8 is too high for an urban center such as Berkeley. Such a standard is
9 more appropriate in less dense areas which can obtain vacant lands more
10 readily. Standards have their primary utility as a goal to be achieved
11 rather than as a prescription. As goals they should be realistic and
12 achievable if they are to be taken seriously. A realistic standard for
13 Berkeley park and recreation acreage would be two acres per 1,000 population,
14 or 220 (41 acres of "new" parks) acres of City-owned/operated park and
15 recreation space. This standard, if seen as a long range goal and if combined
16 with increased coordination with the school district and regional entities,
17 should provide adequate recreation opportunities.

18 The acquisition of land for park and recreation use raises a critical
19 concern: reduction of the City's tax base. With 257 acres of vacant land
20 scattered throughout the City but mainly in the North Hills, surely not all
21 parcels should be developed for park/recreation/open space uses. Conversely,
22 neither should each vacant lot be developed for residential or other purposes.
23 Berkeley is a diverse City with competing demands for each vacant parcel.
24 Some parcels should be developed for housing, others in appropriate locations
25 should be developed for commercial or industrial use, others should be acquired
26
27

EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

Park Standards, Cont'd

1 by the City for park/recreation purposes. The City should also consider
2 methods to retain open space other than acquisition such as leasing, density
3 transfers, easement acquisition, etc. Full "fee simple" acquisition should
4 be utilized as a technique for larger sites and unique opportunity sites
5 intended for full public use. A land banking program in conjunction with
6 housing programs which would allow the City to use the site for parks in an
7 interim basis with non-permanent equipment and later gradually develop a
8 park or housing development should be pursued.

9 The 1955 Master Plan called for school sites to be expanded so that park
10 standards could be met. Inclusion of school playgrounds in the Berkeley
11 recreation system is still appropriate because of their distribution through-
12 out the City and the fact that their use will not involve taking additional
13 lands off the tax rolls. New vacant sites for predominately park and recrea-
14 tion use should be acquired by the City, but emphasis should be given to
15 making more efficient and intensive use of existing facilities and opportu-
16 nities including school yards. The Washington Elementary School Yard is an
17 example of how the paved area which surrounds many Berkeley schools could be
18 partially given over to grassy areas. The Adult School and the Early
19 Learning Center are other examples. The key component of such a system would
20 be, of course, increased cooperation between City government and the Berkeley
21 Unified School District. Appropriate arrangements between school districts
22 and City governments have been achieved in other cities and can be achieved,
23 with effort, in Berkeley.

EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

High Recreation/Park Demand Areas

1 Berkeley's 176 acres of city-owned and/or operated parks are not evenly
2 distributed throughout the City. In fact, some areas have no publicly owned
3 parks or recreation facilities other than school playgrounds. Whether an
4 area has no parks or has many parks is not the only important consideration
5 for park planning. With the present and future constraints on the municipal
6 budget for park maintenance, acquisition of new facilities needs to be viewed
7 in a systematic yet flexible manner. Many park and recreation experts feel
8 that the provision of new facilities should be based on the effective demand
9 for them. That is, does a given area have a high or low likelihood to use
10 new facilities intensively. And, if so, what is the appropriate composition
11 of recreation services which should be provided.

12 Several Cities have devised methods to determine "high-demand" areas
13 for recreation facilities. The Oakland Open Space, Conservation and Recreation
14 Element lists seven factors affecting recreation demand: total population,
15 the age profile, income distribution, mobility, leisure time, housing type
16 and cultural changes. Of these seven components, three indicators were
17 selected which would express the "effective population" for a study area
18 grouping of census tracts:

- 19 1) the percentage of persons under 18 years of age;
- 20 2) the percentage of persons below the poverty line (as defined
21 by the 1970 census);
- 22 3) the percentage of housing units in multi-family buildings
23 (two or more unit structures as defined by the 1970 census).

24 If a study area had a higher than city wide average percentage of young
25 people, poor people and multi-family units, its effective population will
26
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EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

High Recreation/Park Demand Areas, Cont'd

1 be higher than its actual population. The reverse will be true if an area
2 has lower than average percentages. To determine per capita acreage or
3 investment in parks, the total amount of acreage or investment was divided
4 by the effective population. For future investment in neighborhood and
5 community parks and recreation it was assumed that the more deficient
6 an area is now, compared to the "best off" area, the one with the highest
7 per capita investment or acreage --the bigger the share it should get of
8 future investment

9 The San Francisco Recreation and Open Space Element also noted several
10 large areas in that city where the demand for recreation and open space
11 far exceeds the supply, where opportunities for recreation are restricted
12 because of social and economic factors and where recreation facilities
13 are deficient and limited in the programs that can be provided. The
14 selection of those "high need" neighborhoods was based on median income,
15 population density, the delinquency rate, the elderly population and the
16 youth population, measured against the number of recreation centers, acres
17 of recreation facilities and recreation staff hours allotted to each
18 neighborhood.

19 While San Francisco and Oakland have utilized sophisticated methods of
20 determining park/recreation demand, a less sophisticated method is appro-
21 priate for a city the size of Berkeley. Such a method would involve the
22 analysis by residential census tract of existing recreation facilities
23 including school grounds and other than view or ornamental parks, and vacant
24 lots measured against net residential density, the percentage of
25 persons under 18 years of age and the percentage of persons below poverty
26
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EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

High Recreation/Park Demand Areas, Cont'd

1 income. Those residential census tracts which contained a high combination
2 of socio-economic indicators and little vacant, park or schoolyard land
3 could be termed "high-demand" areas. (See Figure 6) These areas could
4 then be designated for a larger share of future City investment of funds for
5 acquisition of new facilities and improvement of existing facilities.

6 The indicators were chosen because they correspond to local and national
7 experience of park users. In some respects the indicator selection may be
8 "begging the question" because people in area without parks might not be
9 frequent park users. Consequently, the fact that a census tract is without
10 existing recreation facilities should be given greater importance than other
11 indicators.

12 The selection of relevant indicators for high demand areas is the be-
13 ginning point in determining priorities among competing options for park/
14 recreation acquisition and/or development. Some tracts may be "high demand"
15 by only a very few percentage points. In fact, the distance between "high
16 demand" and "medium demand" is not very great. Therefore, whether an area
17 happens to be "high demand" should be seen as one input to the resource allo-
18 cation process. A flexible approach may be necessary whereby the six indi-
19 cators are balanced against cost and availability of land, projected main-
20 tenance costs, expressed neighborhood desire for parks, etc. The "high
21 demand" areas and the six indicators are meant to be general minimum guide-
22 lines for resource allocation rather than a strict formula. Readily avail-
23 able opportunities which exist in other census tracts of slightly lower than
24 "high" should not be overlooked. However, those tracts which rank very low
25 should receive the lowest priority for future park acquisition.

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BERKELEY

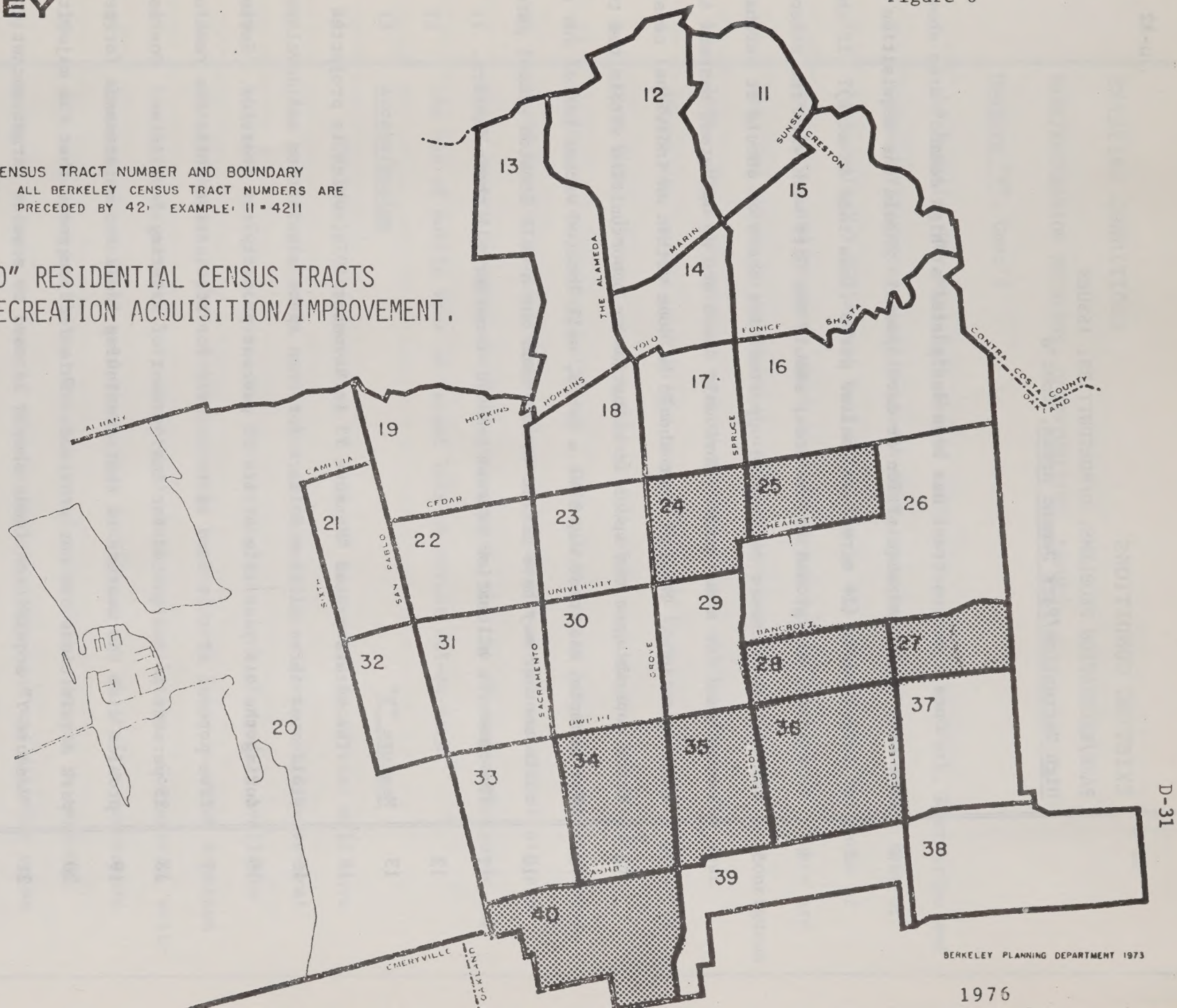
Figure 6

11

1970 CENSUS TRACT NUMBER AND BOUNDARY

NOTE: ALL BERKELEY CENSUS TRACT NUMBERS ARE
PRECEDED BY 42. EXAMPLE: 11 = 4211

"HIGH DEMAND" RESIDENTIAL CENSUS TRACTS
FOR PARK/RECREATION ACQUISITION/IMPROVEMENT.



EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

High Recreation/Park Demand Areas, Cont'd

1 Once a census tract has been designated a "high demand" area should
2 the City emphasize acquisition or development? Should the acquisition be
3 of larger parks (1+ acres) or smaller parks (less than an acre)? If there
4 is a school playground in the area, should the City work with the school
5 district to increase recreation opportunities there or should it purchase
6 vacant land for a new park? Obviously there are no universal answers to
7 these questions. Much of what should be done within an individual census
8 tract depends upon the specific situation or opportunities within the tract.
9 For example, one tract may have a large, well located vacant parcel for sale,
10 while another may have little vacant land but a well located school yard.
11 The resource allocation process should consider all these factors.

Measure "Y"

12
13
14 The voters passed "Measure Y" in November 1974, which is projected to
15 yield over three million dollars for open space acquisition and development
16 during the six year life of its 20 percent property tax override. Seventy-
17 five percent of this fund is to be used for acquisition while the remaining
18 25 percent is designated for improvement of existing facilities. One major
19 problem with the measure is that continuing funds for maintenance for new
20 park acquisitions are not provided. This fact suggests that the majority of
21 "Measure Y" acquisition funds should be used to acquire larger vacant or
22 underutilized parcels rather than parcels less than one acre. According to
23 the Park, Recreation and Community Services Department and other studies,
24 larger sites are less expensive to maintain and can offer a more varied
25 recreational program than can scattered smaller sites. Small sites, such as
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EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

Measure "Y", Cont'd

1 the Berkeley Way Mini-Park should still be acquired, but Park, Recreation and
2 Community Services staff suggests that approximately 20,000 square feet or
3 four typical 5,000 square foot City lots is the optimum size, in terms of
4 facilities and programs which should be provided for mini-parks. There are
5 very few places in residential areas of Berkeley which contain four contiguous
6 lots. There are several ways to provide a site of this size. The most
7 direct way, as was used in the case of Willard Park, is to acquire property
8 over time. However, such a method will often require the demolition or
9 moving of residential buildings. Other less costly but more complex methods
10 would involve partial street closures (with the mutual consent of all pro-
11 perty owners involved and City government), the use of common backyards, or
12 the use of mobile vans on vacant lots or street cul-de-sacs.

Access/Design

14 Obviously, the provision of park and recreation facilities will have
15 less benefit if people cannot get to them easily. There could be several
16 barriers to full access. One barrier could be lack of readily available
17 transportation, others could be poorly located park sites in which a person
18 has to cross several busy streets to reach the facilities. Conversely, well-
19 located, intensively used recreation facilities act as traffic generators
20 as can be seen easily on weekends at Live Oak Park. Access to regional
21 parks is by auto or transit vehicle while neighborhood and district parks
22 are accessible by walking as well as by transit or automobile.

23 Accessibility is also a function of design in that elderly, disabled
24 and young persons may need specially designed facilities so that they may
25 use them easily. Well-designed recreation facilities, as other physical
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PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

Access/Design, Cont'd

1 structures, should blend harmoniously with their surroundings. Park
2 facilities should be well-landscaped but not so heavily planted as to in-
3 hibit effective use. Diversity, variety of plants and materials and a safe,
4 sensible layout should be features of all park designs. Parks should be
5 designed in such a manner to minimize maintenance costs through the use of
6 sturdy fixtures and easily-maintained, or native plant species. Design
7 excellence of park and recreation facilities should be practiced to encourage
8 full and effective use by people the facility is expected to serve.

9 An important area for providing park and recreation facilities is at
10 a person's place of work. Those persons who work in the Berkeley
11 Central Business District are fortunate to have Civic Center Park as a re-
12 source for lunchtime and after work activities. In addition, both the YMCA
13 and YWCA provide gymnasias which are available at noontime for CBD employees.
14 There are also numerous sitting areas and benches where people may visit
15 with friends, or, on balmy days, eat lunch outdoors. Other commercial areas
16 and the industrial area with the exception of the Adeline/Alcatraz District
17 are deficient in terms of readily accessible recreation facilities for
18 persons who work there. Arrangements with owners of vacant lots in commer-
19 cial/industrial areas might be possible whereby the lots could be used for
20 park/recreation purposes with mobile or non-permanent fixtures which could be
21 moved if the lot were sold.

22 Residents of many Berkeley apartment buildings also suffer from the
23 lack of on-site recreation facilities. While it is infeasible to make open
24 space requirements retroactive for residential developments, Berkeley has
25 required since 1973, that new apartment buildings provide more adequate usable
26 open space.

EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

Diminution of Park Space

1 Demands for vacant sites for municipal uses has increased over the last
2 20 years. In many cities this demand has been met through building public
3 structures on park/recreation space. Such a use has advantages in that it
4 does not require additional land acquisition, reduce the tax base nor does
5 it reduce the City's housing supply. Although this issue has not been
6 actively discussed in Berkeley in recent years, there is always the possi-
7 bility for the issue to arise in the future. Such parks as Civic Center
8 and San Pablo provide welcome relief to the surrounding areas and oppor-
9 tunities for recreation activities. These opportunities should not be re-
10 duced through the building of non-recreation oriented buildings. Facilities
11 which are non-recreation related, such as senior centers, administrative
12 offices, etc., should be built on existing open space only as a last resort
13 once other options have been explored and found undesirable.

Social Problems

15 Berkeley is fortunate in that its park and recreation areas are generally
16 free from such crime problems as rapes and muggings. While such incidents
17 have occurred during the past, they have been very infrequent.

18 Most social problems are minor. A prevalent one is the propensity of
19 certain pet owners to utilize parks for walking their animals. Many com-
20 plaints about Berkeley's parks involve conflicts between pet owners and non-
21 pet owners. While the issue is an emotional and complex one, solutions need
22 to be devised to ameliorate both sides without a general banning of animals
23 from parks. Perhaps certain days, time periods or areas could be set aside
24 for dog walking.

25

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EXISTING CONDITIONS

PARK/RECREATION PROBLEMS, OPPORTUNITIES, ISSUES

Views

1 One of Berkeley's most endearing assets is its unparalleled natural
2 setting with steep hills rising to 1100 feet from the gently sloping bay
3 plain. Certain views from the hills may be so magnificent that they
4 warrant land acquisition to preserve a view for the public. Examples of
5 this type in Berkeley include Cragmont, Indian Rock, John Hinkel, Stoneface
6 and Terrace View Parks. Other views of interest include views of the Bay
7 from houses in the hills or the upper floors of apartment buildings in the
8 "flatlands" or a view of the hills from houses in the "flatlands." A
9 pleasant vista of either the hills or the Bay adds much to the quality of
10 Berkeley's urban environment while also increasing property values and the
11 City's tax base as much as an estimated ten percent.

THE WATERFRONT

The City of Berkeley has historically been vitally interested in the comprehensive development of its waterfront. Over a considerable number of years, many ideas and plans have been originated for the development of Berkeley's waterfront lands. These plans have differed in purpose, scope and detail, but the significant aspect of all the early plans, such as those proposed by Colonel T. H. Rees in 1912, J. J. Jessup in 1918, R. Jennings in 1919, Stephen Child in 1926 and R. L. Vaughn in 1930 called for the development of harbor facilities with piers and slips capable of accommodating ocean-going vessels. In the 1940's, subsequent plans such as Robert Sibley's also included development of a major international airport with necessary taxiways, parking aprons, hangars, shops and office buildings. Other plans, such as the one proposed by the Santa Fe Railroad Company, in 1948, highlighted the development of industrial areas on the waterfront. Departing from these earlier approaches, the 1955 Master Plan (Waterfront Section) proposed the development of the waterfront as a completely new urban site, with a balanced combination of uses including residence, commerce, recreation and transportation. A sketch plan indicated reclamation of 2,500 acres of land extending nearly three miles west of the Eastshore Freeway. Detailed studies to determine the engineering and economic feasibility of this sketch plan followed.

In 1956, the Tudor Engineering Study reported that reclamation of the tidelands was feasible, although not on the scale envisioned in the 1955 Master Plan. The City, therefore, formulated a waterfront study program in 1957, calling for further analysis of the total amount of land fill, together with economic considerations of development and of potential land uses suitable to the area. The City contracted with a team of engineering, economic and planning consultants in 1959 to study the technical phases of the program. A Joint Committee of the Planning and Recreation Commissions was formed to provide general policy guidance to the consultants. After extensive public discussion, the Planning Commission submitted to the City Council, in 1961, a major amendment to the Waterfront Section of the Master Plan, including a substantially revised map. This plan proposed a land fill out to the Corps of Army Engineers' Bulkhead Line (nearly two miles west of the Eastshore Freeway) and contained a variety of land uses, including residential, industrial, recreational, educational, airport and transportation facilities. The plan involved reclamation of about 2,000 acres. During the City Council's public hearings on the recommended plan, considerable opposition arose, particularly from a newly organized group of citizens, the Save San Francisco Bay Association. Primary concern centered around the extent of fill proposed and the effect this plan and others in the Bay Area would ultimately have in reducing the water area of the Bay. Because of this concern, the City Council requested that alternative plans be prepared, and that an East Bay Waterfront Planning Committee be formed to study the feasibility of several cities undertaking cooperative shoreline planning.

THE WATERFRONT, Cont'd

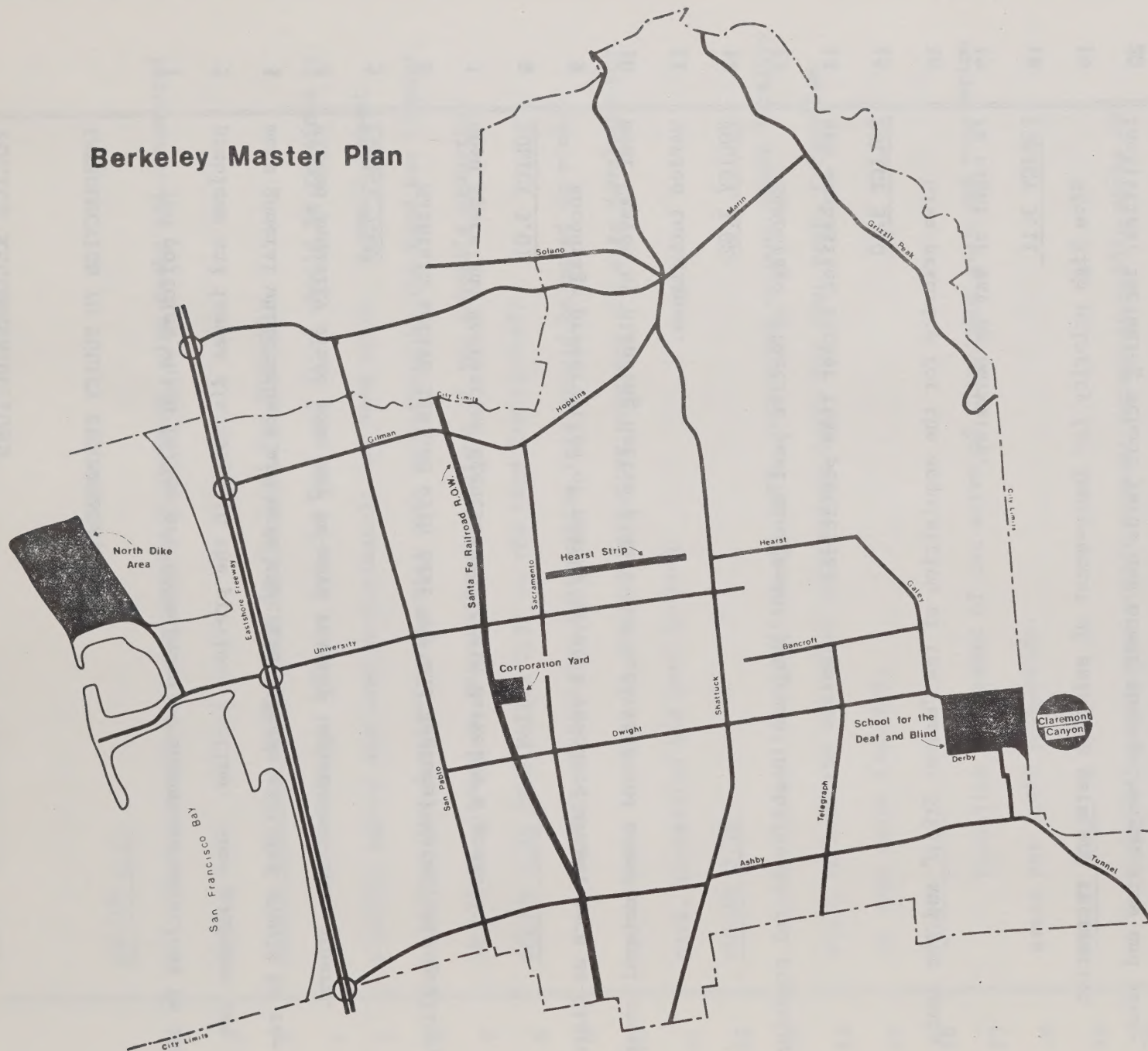
As the work of the East Bay Waterfront Planning Committee started, the Association of the Bay Area Governments also became active in an effort to achieve regional planning for the entire Bay Shoreline. Late in 1963, the Santa Fe Railway Company joined this trend, presenting a proposal for the regional development of the East Shore Tidelands, prepared by Victor Gruen Associates. In Berkeley, the Santa Fe Plan suggested extensive fill for residential, industrial, commercial and recreation use.

Previous plans for Waterfront development including the 1955 Waterfront Section of the Master Plan and the 1961 proposed amendment to this section were all directed toward development based upon a substantial amount of land fill. Each of these proposals had assumed a need for a variety of uses and extensive land fill to accommodate them. In 1963 the City Council adopted policies that reflected a fundamental change in the earlier assumptions: that Waterfront fill should be limited, that park and recreation use should be emphasized and that plans should be considered more fully in the regional context. These policies were expressed in an Interim General Waterfront Development Plan.

While the position of the City is clearly in support of regional planning efforts and the retention of maximum open water, Berkeley is also aware that exceptional opportunities exist for its Waterfront, and that many of these opportunities will not be affected substantially by regional studies. The 1964 Plan was modified in 1966 to further limit the amount of fill.

In 1972, the City of Berkeley was sued by Santa Fe/Murphy regarding development rights for private lands on the Waterfront. This matter is still under litigation.

Berkeley Master Plan



Future Open Space Opportunities - Major Sites

NOTE: Portions of these sites will be planned for housing and/or public buildings

SCALE IN FEET
0 2500 5000 7500



Prepared by the Comprehensive Planning Department July 1976

POLICY RECOMMENDATIONS

INTRODUCTION TO POLICY RECOMMENDATIONS

1 The policies which follow are formulated to encourage solutions to the
2 problems and issues discussed in the previous section. Some policies are
3 more general while others are more specific. These policies should be re-
4 viewed annually since some may be more readily implemented than others.

POLICY 3.00

6 Maintain active liaison with East Bay and Regional Water, Air Quality,
7 Open Space and Recreation agencies to attain Berkeley's goals.

POLICY 3.01

9 Encourage preservation of nearby natural resource areas, such as Clare-
10 mont Canyon by planting native plants and materials and sound natural conser-
11 vation techniques.

POLICY 3.02

13 Encourage effective pest management programs in which natural predators
14 are emphasized rather than pesticides.

POLICY 3.10

16 Give priority for the acquisition of the "Hearst Strip" and the Santa
17 Fe right of way by Berkeley.

POLICY 3.11

19 Give high priority for improvement of existing park and recreation
20 facilities, including school yards and other than pathways, view and orna-
21 mental parks.

POLICY 3.12

23 Give medium priority for acquiring neighborhood park and recreation
24 facilities which do not reduce Berkeley's housing supply.

POLICY RECOMMENDATIONS

POLICY 3.13

1 Give low priority for improving pathways, view parks and ornamental
2 parks.

POLICY 3.14 (See Policy 2.86 in the Land Use Element)

4 The California Schools for the Deaf and Blind should be retained by
5 a public agency and used predominately for open space. A small amount
6 of medium low density residential uses as defined by the Land Use Element,
7 should be allowed in the northwest quadrant of the School's property.

POLICY 3.15 (See Policy 2.31 in the Land Use Element)

9 The City of Berkeley Corporation Yard should be moved to a more
10 appropriate location in the manufacturing area and the site developed for
11 park, recreation and some housing.

POLICY 3.16

13 The budget for acquiring any park, recreation or open space facility
14 shall include the estimated maintenance costs for that park, recreation
15 or open space facility.

POLICY 3.17

17 Establish a standard of two acres of City-owned park and recreation
18 areas per 1,000 population.

POLICY 3.18

20 Enhance and improve public transit access to public parks and
21 recreation facilities including the Waterfront.

POLICY 3.19

23 Existing parks and other public open space areas including the Water-
24 front area, should not be diminished by parking, streets or non-park
25 related facilities.

POLICY RECOMMENDATIONS

POLICY 3.20

1 Develop additional after school and weekend recreational activities at all
2 schools through joint City/district use of Berkeley Unified School District
3 facilities.

POLICY 3.21

5 Encourage innovative use of public and private lands including streets
6 and backyards for park and open space purposes.

POLICY 3.22

8 Protect public views in Berkeley of both the San Francisco Bay and the
9 Berkeley Hills.

POLICY 3.23

11 Coordinate City open space systems and programs with the recreational
12 systems, program spaces of other jurisdictions and private facilities.

POLICY 3.24

14 Institute a Citywide street-landscaping program in consultation with
15 residents of each City neighborhood.

POLICY 3.25

17 Continue to require adequate usable open space in all new private resi-
18 dential developments.

POLICY 3.26

20 Preserve and enhance by providing pedestrian access where possible, to
21 those open creeks which carry significant amounts of water throughout the
22 years.

POLICY 3.27

24 Fund a program to enable advance acquisition of land for open space and.
25 other public facilities and programs as such parcels come on the market.

26

27

POLICY RECOMMENDATIONS

45.

POLICY 3.30 (See also Policy 2.73 in Land Use Element)

The University should preserve its hill lands in open space for use as an ecological study and environmental preservation area.

POLICY 3.31 (See also Policy 1.70 in the Land Use Element)

The Recreation Commission shall have the initial responsibility for parks and recreation facility development plans including the publicly-owned Waterfront lands.

POLICY 3.32

Encourage community involvement in the construction of small public park projects.

POLICY 3.33

Planning for parks and facilities should be based upon comprehensive and thorough evaluation of the present and estimated future needs and desires of Berkeley residents.

POLICY 3.34

Recreation facilities should be flexibly and safely designed to serve the needs of people.

POLICY 3.35

All recreation facilities in the City of Berkeley should be well-maintained and staffed to carry out needed recreation programs and services.

WATERFRONT -- GOALS AND POLICIESGOAL

DEVELOP AN UNBROKEN STRETCH OF OPEN SPACE ALONG BERKELEY'S SHORELINE FROM ALBANY TO EMERYVILLE; ACQUIRE AS MUCH ADDITIONAL WATERFRONT AREA AS IS FEASIBLE FOR PUBLIC PURPOSES. INSURE ADEQUATE CONTROL OVER DEVELOPMENT OF THE PRIVATE LANDS TO ASSURE THAT THE PUBLIC INTEREST IN THESE LANDS WILL BE PRESERVED AND ENHANCE EXISTING RECREATION AND COMMERCIAL/RECREATION DEVELOPMENT.

POLICY RECOMMENDATIONS

POLICY 3.40

1 Require that all new development within the Waterfront area meet the
2 following criteria:

- 3 • Complement the unique Waterfront setting. Insure adequate
4 public access to the shoreline or other public places;
- 5 • Enhance recreational opportunities and insure use of the
6 Waterfront area by a diverse population (age, sex, race, income);
- 7 • Recognize areas which require special management or regula-
8 tion because of hazardous unstable soil conditions or other
9 special conditions;
- 10 • Complement existing recreation or commercial-recreation
11 development.

12 In addition, there shall be specific site plans developed for each of the
13 public areas and these shall become a part of this Element.

POLICY 3.41

15 The Waterfront should be designed to be visually interesting and attrac-
16 tive both within itself and as viewed from a distance. Plans for the area
17 should include a creative shoreline design, incorporating varying elevations
18 of terrain and retention of a maximum amount of water with public access.

POLICY 3.42

20 Increase access for pedestrians and bicyclists to the Waterfront.

21 The first order of priority should be given to changes to each Waterfront
22 access so that pedestrians and bicyclists may have safe access to the Bay
23 front.

POLICY RECOMMENDATIONS

POLICY 3.44

The publicly-owned land north of Spinnaker Way should be devoted to public open space and recreation and not developed with structures or organized sports activities. The area will be pedestrian and bicycle oriented (with no public roads through or around the area) and protected from the intrusion of incompatible uses.

ACREAGE OF RECREATION AND PARK FACILITIES

	<u>Area</u>
Aquatic Park - Addison & Bancroft	99.36 Ac.
Berkeley Rose Garden - Euclid & Bay View Pl.	3.64
Berkeley Way Mini-Park - Berkeley Way between Chesnut & West	.43
Bowling Greens - 2270 Acton Street	1.81
Charles Dorr Mini-Park - Acton between Allston & Bancroft	.60
Civic Center Park - Grove & Center	2.77
Codornices Park - 1201 Euclid Ave.	10.60
Columbus Mini-Park - 9th between Allston & Bancroft	.46
Cragmont Rock Park - Regal Road & Euclid Ave.	3.00
Glendale - La Loma Park - Glendale & La Loma Avenues between Fairview & Harmon	5.61
Greg Brown Mini-Park - between Adeline & Dover	.58
Grove Playground - 2828 Grove	2.45
Haskell/Mable Mini-Park - Haskell & Mable	.13
Indian Rock - between Arlington & Marin	1.18
James Kenny Park - 8th & Delaware	4.06
John Hinkel - South Hampton & San Diego Rd.	4.19
Live Oak Park - Shattuck & Berryman St.	5.52
Prince St. Totlot 1969-70 - Prince between California & King	.15
Remillard - Keeler Ave. & Poppy Lane	5.90
Roosevelt Totlot 1969-70 - Roosevelt between Channing & Dwight	.15
San Pablo Park - Oregon Park Sts.	12.95
63rd Street Mini-Park - 63rd St. between California & King	.19
Spruce-Michigan - Spruce and Michigan	1.19
Stoneface - San Fernando & Thousand Oaks	.73
Terrace View - Fairlawn Dr. & Queens Rd.	.71
Totland/Virginia-McGee - Virginia & McGee	.37
Willard Park 1969-70 - 2720 Hillegass	2.72
William Jr. Davis Mini-Park - Dwight between Telegraph & Dana	.49

ATTENDANCE AT MAJOR PARKS AND RECREATION CENTERS, CITY OF BERKELEY 1973 - 1974

	1973 May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1974 Jan.	Feb.	Mar.	Apr.	May	TOTAL
Grove Center (Indoor)	4012	3060	4103	3980	3982	4714	4689	5329	6145	5298	5408	5372	4379	60,421
Grove Center (Outdoor)	4504	5693	6140	3518	4865	4333	4587	4601	4277	2713	1104	3440	2859	52,634
James Kenney (Indoor)	8483	12,714	NA	15,787	7737	9600	8624	8711	7826	NA	CLOSED	NA	NA	79,482
James Kenney (Outdoor)	9778	14,520	18,781	14,472	8080	10,613	8142	7966	7604	5852	NA	6366	8132	120,306
Live Oak (Indoor)	5476	6962	8658	4737	5554	6357	6075	3785	5755	5653	9956	12,006	9637	90,611
Live Oak (Outdoor)	9017	11,463	13,395	11,657	6814	11,261	10,103	15,640	17,798	36,915	53,386	62,788	92,386	352,623
San Pablo (Indoor)	3684	3412	3624	2787	2546	3622	2797	2389	2638	2505	4063	3023	4719	41,809
San Pablo (Outdoor)	13,404	14,219	11,662	9719	9735	7595	3321	3120	4019	4154	3635	7034	8494	100,111 897,997

*NA - Data Not Available

SOURCE: Berkeley Parks and Recreation Department, 1974

STAFFING OF MAJOR PARKS AND

RECREATION FACILITIES

Positions listed are full-time permanent career; not necessarily filled at this time. Part-time positions vary according to the time of the year. Codornices Park, La Loma, and Terrace View Parks, each have one permanent part-time position, working approximately 20 hours per week.

	<u>Recreation Supervisor</u>	<u>Recreation Leaders</u>
Grove Center Park	1	2
James Kenny	1	1
Live Oak	1	2
San Pablo	1	2

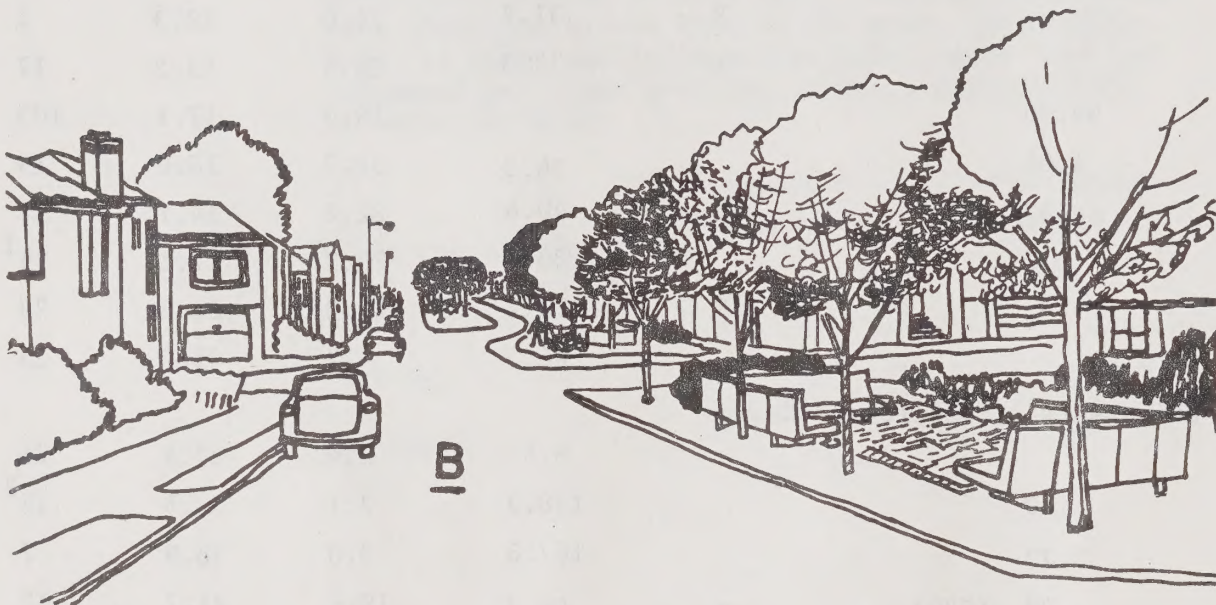
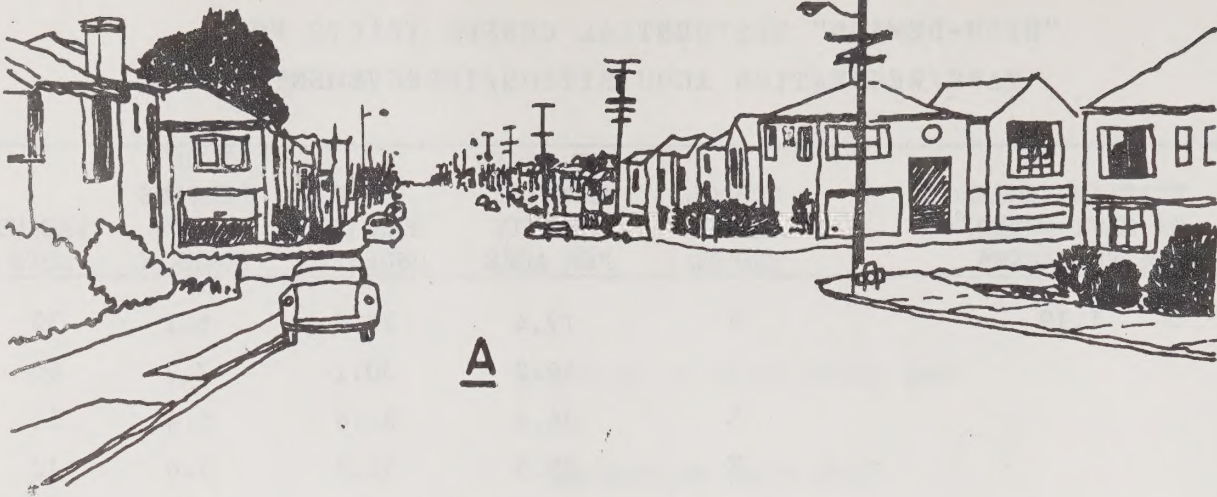
SUGGESTED INDICATORS FOR DETERMINING
 "HIGH-DEMAND" RESIDENTIAL CENSUS TRACTS FOR
 PARK/RECREATION ACQUISITION/IMPROVEMENT

CENSUS TRACT	EXISTING ACREAGE OF CITY-OWNED/ LEASED PARKS*	SCHOOL PLAY-GROUND	NET RESIDENTIAL DENSITY PER ACRE	% OF PERSONS UNDER 18	% OF PERSONS BELOW POVERTY	VACANT LOTS
4211	1.19	X	17.4	20.4	6.1	53
4212			19.2	30.1	7.7	60
4213		X	24.6	24.6	5.9	11
4214		X	25.3	32.2	3.6	12
4215		X	18.2	26.3	5.9	122
4216	16.21	X	21.7	24.4	8.3	105
4217	5.52		39.8	17.0	9.9	9
4218		X	31.7	26.0	12.3	4
4219		X	33.3	25.6	13.2	17
4220	99.36			19.3	17.1	103
4221	4.06		36.3	32.7	18.0	19
4222	.43	X	40.6	22.8	14.7	30
4223	.37		39.6	20.7	17.1	9 ¹
4224**		X	71.2	10.3	24.2	23
4225**			66.3	4.7	25.0	15
4226	University of California Campus					
4227**			8.5	2.4	32.9	26
4228**	.49		148.9	2.1	42.5	15 ²
4229	2.77		167.8	3.0	38.9	7
4230	.30 (CBD)	X	46.3	19.9	21.7	12
4231	2.41	X	45.0	23.7	18.6	13
4232	.46	X	40.6	34.7	21.5	15
4233	12.95		36.0	24.9	12.9	18
4234**	2.45	X	45.8	27.5	21.3	13
4235**		X	56.3	20.5	29.9	12
4236**	2.72	X	57.5	9.0	31.5	11
4237		X	40.7	26.4	23.5	4
4238		X	19.8	26.5	5.6	28
4239			45.9	18.0	21.4	16
4240	.90	X	44.5	30.1	27.2	20

*Except view & ornamental parks
 **"High demand" Census Tracts

¹Includes "Hearst Strip"
²Includes "Peoples' Park"

SOURCES: 1970 Census - Berkeley Park, Recreation & Community Services Dept.
 Berkeley Planning Department Vacant Lot Maps, 1974



STREETS AS OPEN SPACE

A EXTREMELY WIDE STREETS IN RESIDENTIAL AREAS DEVOTE EXCESSIVE SPACE TO THE AUTOMOBILE AT THE EXPENSE OF PEDESTRIANS, AND ENCOURAGE SPEEDING CREATING A SAFETY HAZARD AS WELL.

B REDESIGN OF SUCH AREAS TO PROVIDE MORE SPACE FOR RECREATION AND PLANTING ADDS GREATLY TO THE CHARACTER AND AMENITY OF THE NEIGHBORHOOD. NEWLY DEVELOPING AREAS CAN ALSO PROVIDE SUCH AMENITY AS PART OF THEIR STREET LAYOUT

HOUSING ELEMENT



STREETS AS OPEN SPACE

1. STREETS ARE OPEN SPACE
 FIRST AND FORTH. THEY
 ARE NOT ONLY THE
 CORRIDORS OF THE CITY
 BUT ALSO THE
 PLACES WHERE PEOPLE
 MEET AND LIVE.
2. STREETS ARE OPEN SPACE
 FIRST AND FORTH. THEY
 ARE NOT ONLY THE
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E. HOUSING ELEMENT

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I. INTRODUCTION -----	E-1
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- Vacancy Rate	
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- Equal Access	
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WORKING MEMORANDUM

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1. General from 1960 to 1970

- General Housing
- Urban Renewal Housing
- Housing Act
- Distribution of Housing throughout the City

2-3

- The Right to Buy
- Housing Maintenance Improvement and Protection
- Housing for Persons with Special Needs
- Local Housing
- Responsibility for Housing Issues at University
- Related Homeless
- Role of Metropolitan Residents and Community
- Organizational
- Development of New Housing

2-4

- The Right to Buy
- Housing Maintenance and Improvement
- Housing for Persons with Special Needs
- Local Housing
- Responsibility for Housing Issues at University
- Related Homeless
- Role of Metropolitan Residents and Community
- Organizational
- Development of New Housing

INTRODUCTION

1 The Housing Element defines and articulates the role the City of Berkeley
2 can and should perform in the area of housing. The Element establishes long
3 range housing policies, identifies constraints and delineates coordinated housing
4 policies to be undertaken by the City of Berkeley.

5 If Berkeley is to reach its housing goals, the full cooperation of the pri-
6 vate sector and all levels of government will be required. The Housing Element
7 recognizes this in relating its programs to those of private individuals and
8 organizations, public and non-profit institutions and other public agencies.

9 As part of the Master Plan, housing policies can be related to policies
10 on land use, transportation, open space, seismic safety, noise and citizen par-
11 ticipation. Concurrently, the Element is a broad framework into which specific
12 programs addressing housing conservation, University related housing, housing
13 finance, the development of new housing and housing services can be integrated.
14 The Element can also be used to measure the extent to which private and public
15 actions are achieving City goals and responding to the community priorities
16 expressed in policy statements.

HOUSING SUPPLY

Changes from 1960 to 1970

20 This decade saw significant changes in Berkeley housing, locally and in
21 comparison with regional trends. Most pronounced was the decrease in housing
22 unit size from a median of 4.4 rooms in 1960 to 4.1 rooms in 1970. This is in
23 contrast to the regional median size which remained constant at 4.7 rooms.
24 During this period, household size in Berkeley declined from a median of 2.5
25 persons in 1960 to 2.0 persons in 1970. The proportion of dwelling units in
26 apartment buildings (5 or more units) increased from 23.4% to 35.8% in 1970.

HOUSING SUPPLY, Cont'd

1 Like the region, the cost of housing in Berkeley increased sharply. Rela-
2 tively speaking, median rents and median value of single family owner-occupied
3 homes in Berkeley moved from slightly above the region's median to slightly
4 below it. The median size of units in Berkeley, however, has declined more
5 relative to the region than the median costs; thus, housing costs in Berkeley
6 are actually increasing compared to the region as a whole, in terms of how much
7 housing a given amount of money will buy.

Rental Housing

9 The 1970 Census provides the most detailed picture available of rental
10 housing in Berkeley. Some changes in the housing stock have occurred since
11 1970, but the overall picture has not changed significantly. In 1970 almost
12 two thirds of Berkeley housing was made up of rental units. Most had three
13 rooms or less and only 6% had 6 rooms or more. Twenty per cent rented for
14 \$100 a month or less in 1970; almost 13% rented for \$200 a month or more. The
15 rent distribution was similar to the region but the distribution by unit size
16 showed more small units and fewer larger units. The rent for older housing did
17 not decline sharply. The median rent for units built between 1950 and 1959 was
18 \$139 as compared to \$128 for units built before 1939. The median for the new-
19 est units, however, was \$170. Compared to regional totals Berkeley's older
20 housing was much more expensive but the overall average is similar because
21 Berkeley had a higher proportion of older units.

Owner-Occupied Housing

23 Owner-occupied housing made up almost one third of all occupied housing
24 units in Berkeley in 1970. Seventy-four per cent of all owner-occupied housin
25 in Berkeley was built before 1940 compared to the only 27% in the region as a
26 whole.
27

HOUSING SUPPLY, Cont'd

1 The distribution of the units by value was similar to the region with only
2 one per cent valued below \$10,000, around 45% valued from \$10,000 to \$25,000 and
3 54% valued above \$25,000. The distribution of housing by size is similar to the
4 regional average with Berkeley having more large (7 or more rooms) units than
5 the region (34% versus 27%) a smaller proportion in medium-sized units of five
6 or six rooms (55% versus 62%) and a similar proportion (10%) in small units of
7 four or fewer rooms.

Vacancy Rate

9 In 1970 Berkeley had an overall vacancy rate of 3.6%. The pattern was
10 similar to the region with about 60% of vacancies being rental units, 10% units
11 for sale and 30% other units. For the City and the region, the vacancy rate of
12 housing for sale was less than 1%. Vacancies have declined even more since
13 1970.

Distribution of Housing Throughout the CityStructure Type

16 Berkeley has a wide diversity of housing types. Almost 80% of its housing
17 structures are single family homes which produces the impression of a low
18 density city in most neighborhoods. However, over 35% of its units are in
19 structures of five or more units compared to less than 45% of its units in single
20 family homes. Slightly over 20% are in 2-4 unit buildings. The contrast from
21 one area of the city to another, however, is striking. Single family homes pre-
22 dominate in the North Hills. Over 85% of the units are in single unit struc-
23 tures. Except in the North Hills which is almost exclusively single family
24 homes and Central Berkeley which is almost exclusively apartments, two or four
25 unit structures provide a significant amount of the housing in Berkeley. In
26

HOUSING SUPPLY, Cont'd

1 South Berkeley, 31% of all units are in 2-4 unit structures. Units in buildings
2 of five or more units show the most pronounced concentration with the highest
3 concentration in the downtown and a significant concentration around the campus.

4 Size of Units

5 The median size of units reflects directly the type of structure the units
6 are in. Areas with large numbers of single homes have a larger housing unit
7 while those in areas with many apartment buildings have smaller housing units.
8 There is, however, variation in the size of owner-occupied single family homes
9 with a lower median size west of Sacramento Street compared to the hill areas.

10 Cost of Unit

11 Contrasts in median rents and values throughout the City reflect the loca-
12 tion, condition and size of the housing. In 1970, areas with owner-occupied
13 housing with a median value below \$20,000 were located in south and west Berkeley.
14 Areas with median values between \$20,000 and \$30,000 include the remaining
15 "Flatland" locations. All hill tracts have median values above \$30,000. The
16 pattern of median rents is similar to the housing value distribution.

18 ISSUES

19 The Right to Decent Housing

20 The right to decent housing in a pleasant neighborhood at an affordable
21 cost is the basis of all Berkeley's housing plans and programs. In Berkeley,
22 as elsewhere, this national goal has not been reached. People are attracted to
23 Berkeley by the University of California, its convenient location near the center
24 of the Bay Area, its active political climate, attractive neighborhoods, diverse
25 minority communities, a spectacular physical setting and many cultural opportuni-
26 ties. Much of the demand is from lower income households. The 1975 Housing
27

ISSUES, Cont'd

1 Assistance Plan found more than half (23,632) of the households in Berkeley met
2 federal criteria as lower income households. While many are student households
3 (approximately 10,825 students occupy houses and apartments in Berkeley) many
4 others are minority families, elderly persons and single parent households.

5 Many constraints limit the achievement of this broad goal. Berkeley has
6 little vacant land on which to develop additional housing to meet the demands
7 for housing here. Neighborhoods often resist higher density development. The
8 resulting competition for existing housing causes prices to rise. Only limi-
9 ted financial assistance is available to help low income households meet rising
10 housing costs. City resources for public facilities such as parks and public
11 services such as police and fire are not rising as fast as the costs for provid-
12 ing them.

Housing Maintenance and Improvement

13
14 The wood frame construction that makes up most of Berkeley's housing can
15 last indefinitely if properly maintained. The housing is aging, however, and
16 most is in need of repair. If neglected, an increasing number of homes will
17 become dilapidated - presenting hazards to those who live in them and blighting
18 the neighborhoods in which they occur. Rehabilitation is much less costly than
19 new construction and contributes to community stability.

20 The major impediment to housing maintenance and rehabilitation is cost.
21 Materials, labor and interest rates have all increased. Lower income owners
22 and landlords renting to lower income households often do not have money for
23 prompt repairs. Owners may experience difficulty getting the help needed. Many
24 lack the skill, physical agility or time to undertake maintenance themselves.
25 Some owners are also fearful that making repairs will cause their taxes to
26 increase.
27

ISSUES, Cont'dHousing for Persons with Special Needs

Many Berkeley residents are permanently or temporarily disabled, elderly or dependent. Homelike living environments can contribute to the ability of such persons to lead constructive lives. Such housing is more economical than institutions as well as being more beneficial for its residents.

Many disabled and elderly persons have very low incomes; problems have increased recently because inflation is hardest on those dependent upon pensions and other fixed incomes. These households have little capacity to increase their incomes while costs for such items as medical care are escalating rapidly. Appropriate locations and structures for special housing such as halfway homes are difficult to locate.

Equal Access

As in other communities, discrimination has limited the opportunities of many Berkeley residents to obtain housing. This has affected racial and ethnic minorities, students, households headed by women, the disabled and persons living unconventional lifestyles. Households in some areas of the City have found mortgage financing or fire insurance unavailable or prohibitively expensive. As a consequence, Berkeley has adopted the goal that all residents should have equal access to housing opportunities on a non-discriminatory basis.

While discrimination based solely on race, religion, sex, ethnic background or age is illegal; no standards exist for what are appropriate bases for discrimination (such as ability to pay). Lenders and insurance companies naturally seek out what they consider the best risks when making loans or insuring properties. Again, standards defining the responsibilities of financial institutions to the community and its neighborhoods do not exist.

ISSUES, Cont'd

1 In providing housing assistance the federal and state government often
2 limit the types of household eligible. Berkeley has limited ability to alter
3 such constraints to meet its needs.

Responsibility for Housing Needs of University-Related Households

5 World War II and the years following saw a large increase in Berkeley's
6 permanent population and student population. University expansion removed much
7 older housing near the campus and replaced it with high rise dormitories, park-
8 ing lots and institutional buildings. Students, other young adults attracted
9 by the University environment and other Berkeley residents have become competi-
10 tors for the limited supply of low and moderate cost housing in Berkeley. Only
11 if the University accepts the responsibility for those housing problems it cre-
12 ates can the housing needs of all Berkeley residents (including students) be
13 met.

14 Several obstacles limit University participation in housing. Suitable
15 sites are very scarce. Berkeley does not want more land taken off the tax
16 rolls. The University has no policy on providing housing except to require that
17 housing "pay its own way." Housing must also compete with other University re-
18 quirements for educational and research facilities. These uses have often
19 taken over housing which is then expensive to reconvert to housing.

Role of Neighborhood Residents and Community Organizations

21 Person affected by actions in their community ought to participate in the
22 planning process. When there is a history of cooperation with residents, as in
23 the San Pablo neighborhood, public and private actions contribute to a common
24 plan that is supported by neighborhood residents and the City. An ongoing plan-
25 ning process which integrates the participation of neighborhood residents and
26
27

ISSUES, Cont'd

community organizations into City decision-making in a systematic way can contribute greatly to housing conservation and development.

In attempting to broaden opportunities for citizens to participate in decision-making, several barriers and constraints need to be recognized. Among the obstacles to effective participation is the mobility of much of the population. Another is the lack of established methods for determining the extent to which organizations are representative of the neighborhood or interest group they purport to speak for. Finally, no accepted criteria for delineation of "neighborhoods" have been developed. The Citizen Participation Element policies address these challenges in a comprehensive framework.

Development of New Housing

A low volume of housing construction has occurred in Berkeley since the 1970 Census. Mainly high cost single family houses and apartment developments for special groups such as students and the elderly have resulted. Only one apartment building (containing four units) has been approved for development since passage of the Neighborhood Preservation Ordinance in 1973 which called for inclusion of 25% low income units.

The lack of new construction results in a static housing supply. Increasing pressure on the existing stock to meet demands can result in overcrowding, high costs, few vacancies and insufficient maintenance.

The lack of suitable sites remains the greatest deterrent to new housing. Few economies of scale are available because most sites in the more level areas are relatively small. Recent zoning revisions have reduced the intensity of development permitted in residential zones. Increased review procedures and frequent neighborhood opposition to any new development also deter building.

POLICIES

1 RIGHT TO DECENT HOUSING2 POLICY 4.01

3 Establish and continuously review standards of adequacy for all housing,
4 wherever located and for whomever available, including safety, sanitation,
5 space and other amenities.

6 POLICY 4.02

7 In order to facilitate housing adequacy through conservation of existing
8 housing and development of additional housing as needed, seek reasonable rate
9 financing from public and private sources, especially for low and moderate
10 income housing.

11 POLICY 4.03

12 Coordinate government and private action to produce living environments
13 which offer their residents safety, amenities and reasonable access to trans-
14 portation, services and recreation.

15 POLICY 4.04

16 To make housing available in a range of prices so that all income groups
17 will have reasonable access to housing, seek to increase the number of low and
18 moderate income households receiving rent supports (in subsidy or other form)
19 and in the amount of such support, avoiding undue concentrations of low income
20 housing.

21 POLICY 4.05

22 In order to spread the burden of taxation for support of government and
23 education in a fair manner, (1) seek to lessen or replace reliance on the pro-
24 perty tax and (2) prevent the continued erosion of the property tax base by
25 removal of property from the tax rolls.

POLICIES, Cont'd

POLICY 4.06

Support activities which will expand opportunities for home ownership in single family homes, cooperatives and condominiums. Concurrently, encourage maintenance of an adequate number of units for those best served by rental housing.

POLICY 4.07

Provide reasonable relocation assistance where households are forced to move as a result of city action; seek such assistance from the responsible body where such move is the result of the action of another public body; and by ordinance, require such assistance in appropriate circumstances where such move is the result of private action.

POLICY 4.08

Individually and together with other government bodies, e.g., city, county, regional & state, support those policies at all levels of government which will insure the maximum flow of housing assistance to meet Berkeley needs.

HOUSING MAINTENANCE, IMPROVEMENT and DEMOLITION CONTROLPOLICY 4.11

Institute a comprehensive program of housing conservation to integrate technical and financial assistance, as applicable, to owners and tenants to keep existing housing within the financial means of residents. Control rent increases in housing receiving city financial assistance.

POLICY 4.12

Coordinate a program of code enforcement with adequate assistance programs to insure that housing meets health and safety standards without producing undue hardships for residents.

POLICIES, Cont'd

POLICY 4.13

In residentially-zoned areas, do not permit the demolition of housing or its conversion to non-residential use unless (1) a greater public need is served which can feasibly be met in no other way, (2) replacement housing is provided within a reasonable time, or (3) the structure to be demolished cannot economically be repaired.

POLICY 4.14

Initiate a city program to prevent the loss of housing through abandonment, vandalism or malicious mischief.

POLICY 4.15

Take actions to prevent the loss of residential buildings of aesthetic or historic significance, including administration of the Landmarks Preservation Ordinance.

SPECIAL NEEDSPOLICY 4.21

Support activities that increase the ability of the elderly and the disabled to remain in their home or neighborhood or to locate suitable housing to rent or purchase.

POLICY 4.22

Determine the need for housing to serve the elderly and the physically disabled, especially those of low and moderate income, and encourage the provision of an adequate supply to meet the needs.

POLICY 4.23

Determine the need of persons with disabilities (physical, mental or emotional) for housing in small scale centers, foster homes and halfway houses and encourage an adequate supply to meet the needs.

POLICIES, Cont'd

EQUAL ACCESSPOLICY 4.31

Act to eliminate housing discrimination based on race, religion, sex, ethnic background, age, physical disability or source of income; and, as long as occupancy is consistent with density and environmental standards, discrimination based on marital status, student status or household makeup.*

POLICY 4.32

Allocate housing assistance on the basis of relative need on a non-discriminatory basis.

POLICY 4.33

Aggressively seek to make reasonably priced financing and insurance available to residential properties in all parts of the City.

POLICY 4.34

Promote equitable, cooperative and responsible exercise of privileges and obligations by landlords and tenants.

UNIVERSITY RELATED HOUSINGPOLICY 4.41

Seek agreement from the University that it will develop its housing in accordance with City policies and regulations.

POLICY 4.42

Support the development of new housing for University-related households that will not take additional land off the tax rolls, is compatible with existing development, will be an asset to the neighborhood in which it is located,

*Nothing contained in this policy statement is intended per se to effect any change in density standards.

POLICIES, Cont'd

1 and, if at all possible, provides community facilities for both students and
2 other residents.

3 POLICY 4.43

4 Solicit the University to directly sponsor housing in Berkeley and other
5 appropriate locations for at least 25% of its students at prices they can afford
6 and to expand housing services for students and staff.

7 POLICY 4.44

8 Urge the University to involve residents, community organizations, students
9 and staff, city government and University administration in long and short range
10 planning for University-related housing.

11 POLICY 4.45

12 Seek agreement from the University to compensate the City for services pro-
13 vided to the University and the loss of revenue resulting from University owner-
14 ship of property in Berkeley.

15 POLICY 4.46

16 To expand housing available to students, encourage the University to keep
17 its residential buildings for housing and convert back to residential use those
18 residential buildings now being used for other purposes.

19 THE ROLE OF NEIGHBORHOOD RESIDENTS AND COMMUNITY ORGANIZATIONS20 POLICY 4.51

21 Stimulate the involvement of neighborhood residents and community organiza-
22 tions in planning for housing conservation and development, parks, public
23 facilities and services and transportation.

24 POLICY 4.52

25 Enlarge and strengthen the role of neighborhood residents and organiza-
26 tions in planning and development decisions that affect them.

POLICIES, Cont'd

POLICY 4.53

Encourage mutual self-help activities which further housing and community maintenance and which increase the ability of residents to manage their housing economically.

NEW HOUSINGPOLICY 4.61

Whenever feasible, employ state and federal programs to stimulate the development of new housing for rent or sale to low and moderate income households.

POLICY 4.62

Encourage developments which combine residential with commercial uses in appropriate commercial locations serviced by adequate public transportation.

POLICY 4.63

Encourage the development of new housing on vacant or otherwise suitable land owned by public agencies, consistent with open space needs.

POLICY 4.64

In residentially-zoned areas, encourage the replacement of housing lost
permitted
through deterioration, /conversion to other use, or as a result of public action.

SEISMIC SAFETY/SAFETY ELEMENT

Page 1 of 1

Section 1

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The second part of the document is a list of the names of the members of the committee.

Section 2

Section 3

Section 4

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F. SEISMIC SAFETY/SAFETY ELEMENT

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APPENDICES

SECTION ONE: INTRODUCTION

Berkeley could be hit by a major disaster any time. It could be an earthquake, fire, flood or other natural disaster affecting many Berkeley residents. The resultant damage to people and property is usually decreased considerably if natural hazard considerations are emphasized in the planning/development process of the City and if the community and its public officials are prepared for emergency operations.

Although earthquakes are a part of California's heritage, seismic hazard considerations have played a minor role in the planning/development process of urban areas. Recent State legislation, however, has greatly altered this situation by requiring each California county and City to include a Seismic Safety Element in its Master Plan. State legislation (Government Code, Section 65302(b) specifies that the Seismic Safety Element shall consist of:

"...an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to ground shaking, to ground failures, or to effects of seismically induced waves such as tsunamis and seiches."

"...an appraisal of mudslides, landslides and slope stability as necessary geologic hazards that must be considered simultaneously with other hazards..."

In addition, Government Code (Section 65302.1)* mandates the inclusion of a Safety Element in cities' Master Plans for the protection of the community from fires and geologic hazards and for instituting emergency operations.

*Please see Appendix A for copy of mandate.

1 Since there is a strong interrelationship between the Seismic Safety
2 and Safety Elements, they have been combined into a single document.
3 According to the General Plan Guidelines (California Council on Inter-
4 governmental Relations, 1973), the fundamental goal of the Seismic Safety
5 and Safety Elements is to reduce loss of life, injuries, damage to property,
6 and economic and social dislocation resulting from natural disasters such
7 as fires, floods and seismic-related hazards. The consideration of nuclear
8 disaster is not within the Safety Element.

9 This preliminary draft is organized into three major sections:
10 Inventory/Evaluation, Policy Recommendations and Implementation Programs.
11 The Inventory/Evaluation Section presents a discussion on seismic, fire,
12 flood and related hazards. Areas in Berkeley which exhibit such potential
13 hazards are generally delineated. Given the documentation of local
14 hazards, some of the implications for planning are presented in the findings.
15 In addition, Berkeley's current state of emergency preparedness in the
16 event of natural disasters is discussed. The second major section, Policy
17 Recommendations, furnishes the City's overall policy framework to deal with
18 seismic and related hazards, fire and flood hazards and emergency prepared-
19 ness and recovery for the City. The section on Implementation Programs
20 suggests specific short and long-range programs to implement the City's
21 policies and alleviate Berkeley's potentially hazardous condition.

SECTION TWO: INVENTORY/EVALUATION

I. SEISMIC AND RELATED HAZARDS

1 The San Francisco-Oakland Bay Area is hit by numerous earthquakes every
2 year. Fortunately, most of them cause little or no damage and are not large
3 enough to be felt by many people. A few of these earthquakes such as the
4 ones in Hayward (1868), San Francisco (1906) and Santa Rosa (1969) were very
5 prominent and left behind them considerable damage (See Figure 1 on
6 California's historic earthquakes).

7 Earthquakes in the Bay Area originate along three major faults: the
8 San Andreas, the Hayward, and the Calaveras Faults (See Figure 2). The
9 most important of these faults is the San Andreas Fault system. It is by
10 far the largest fault in the State of California extending from south of Los
11 Angeles to north of San Francisco. In addition, there are numerous other
12 smaller faults that branch out from the San Andreas. The fault zones
13 that exist in the Bay Area are all part of a larger system known as the
14 Circum-Pacific Seismic Belt which includes most of California. This thin
15 band surrounding the Pacific Ocean is responsible for about 80% of the
16 world's earthquakes (See Figure 3).

17 For planning purposes, there are two basic kinds of faults, active and
18 inactive. According to the California State Mining and Geology Board, an
19 active or potentially active fault is defined as a fault which has moved in
20 holocene time (within the last 11,000 years). An inactive fault is one
21 which has been dormant for longer periods of time. In some cases, inactive
22 faults are so labeled due to lack of knowledge rather than actual state.

23 Berkeley has the San Andreas Fault to the west and Calaveras Fault
24 to the east. Moreover, Berkeley is traversed by the Hayward Fault. All
25 three faults are known to be active as evidenced by the damaging earth-
26
27

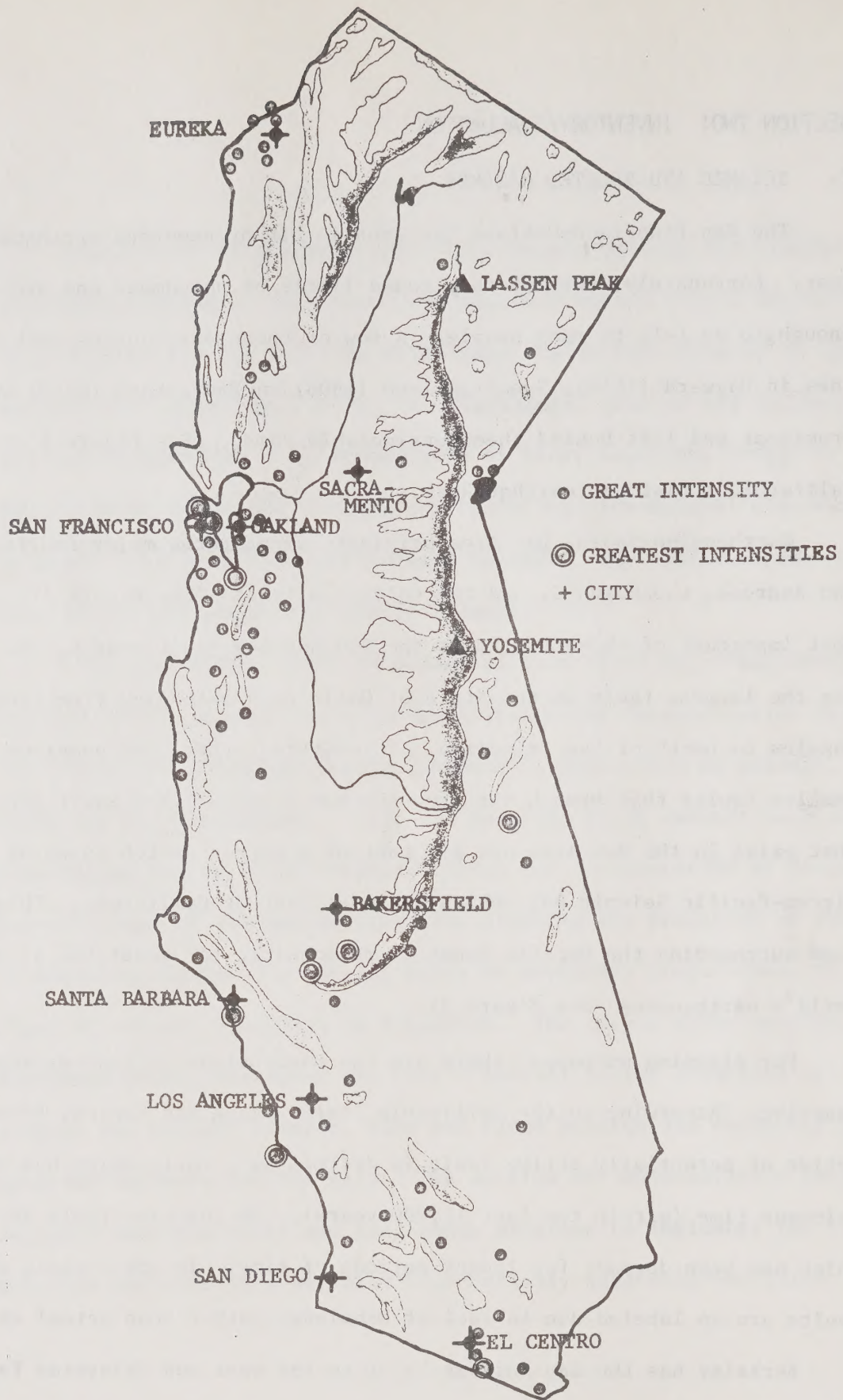


FIGURE 1: CALIFORNIA'S HISTORIC EARTHQUAKES

SOURCE: Earthquake Country,
Robert Iacopi, Lane
Books, Menlo Park,
California, 1971.

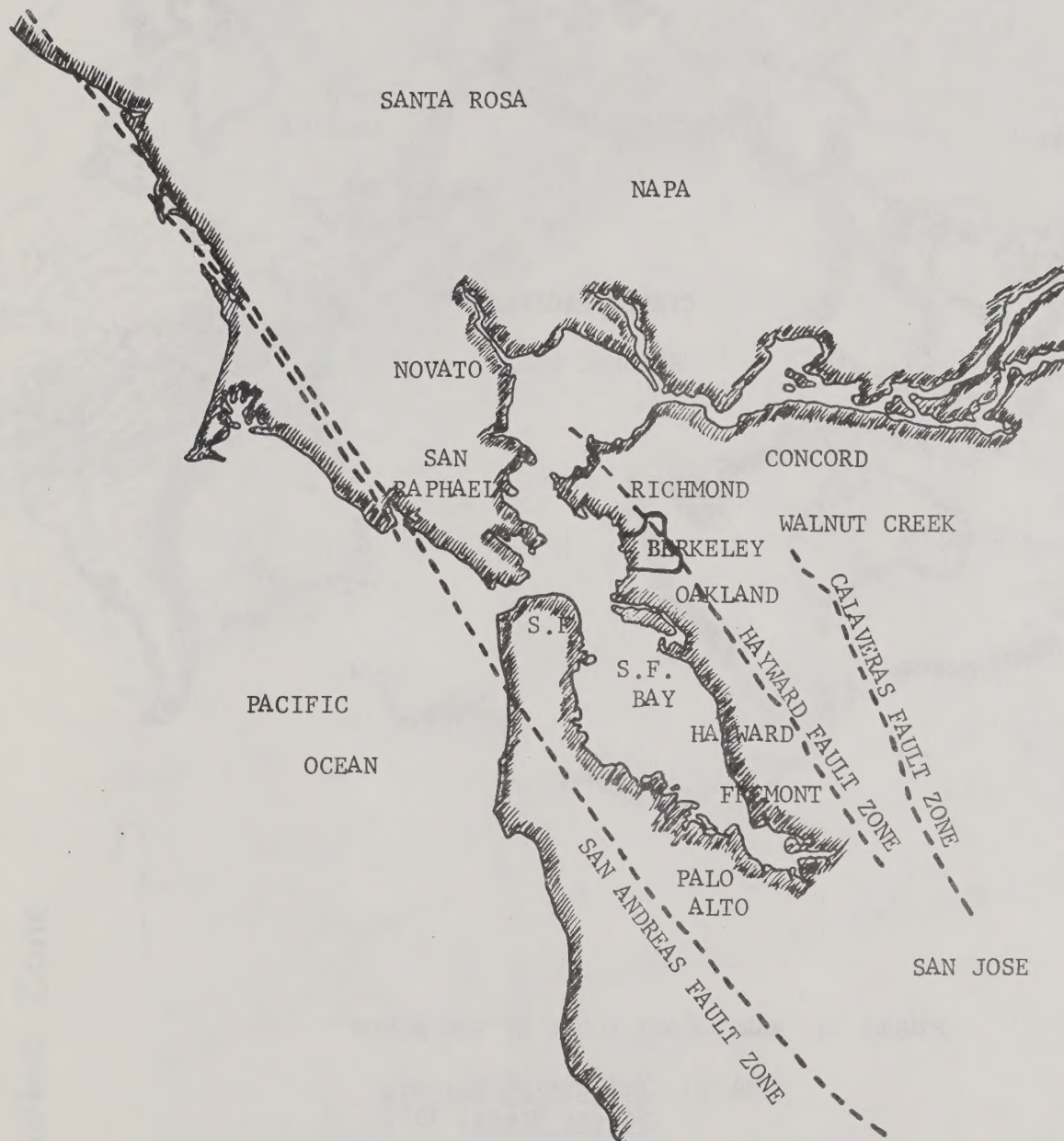


FIGURE 2: ACTIVE FAULTS IN SAN FRANCISCO BAY AREA

SOURCE: "Active Faults in the Southern Part of the S.F. Bay Region," U.S. Geological Survey, 1971.

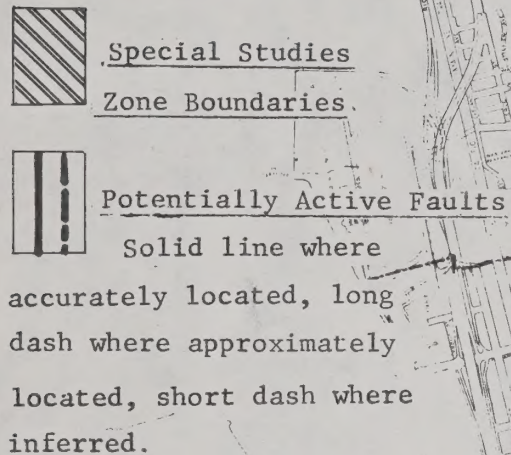


FIGURE 3: EARTHQUAKE ZONES OF THE WORLD

SOURCE: Tri-Cities Seismic
Safety Study, 1973.

Hayward Fault and Special Studies Zone

Figure 4



SOURCE:

U.S.G.S. & State Geologist
1974



1 quakes they have produced in the last 100 years and can, therefore, be
2 expected to do the same in the future. Of primary concern to Berkeley is
3 the Hayward Fault, a branch of the San Andreas, which extends from
4 Fremont, through Hayward, San Leandro, Oakland, Berkeley, El Cerrito,
5 Richmond and San Pablo. Figure 4 shows the Hayward Fault system and
6 indicates where its location is accurately known, approximately known,
7 inferred or concealed. In addition, the Special Study Zone Boundaries
8 encompassing active or potentially active faults are outlined on the Map as
9 mandated by the Alquist-Priolo Geologic Hazard Zones Act of 1972 (See
10 Appendix for provisions of the Act).

11 A. UNDERSTANDING EARTHQUAKES

12 It is believed that the earth's surface is composed of massive plates
13 which are gradually shifting. A fault or fault zone is the place of
14 contact between these massive plates. For example, the San Andreas
15 fault is the place of contact between the Pacific Plate and the North
16 American Plate. A fault creep occurs where there is a smooth and very
17 slow periodic movement due to the gradual shifting of one plate past another
18 unaccompanied by earthquakes. Before an earthquake occurs, stresses
19 steadily accumulate along both sides of the fault as the earth's crust
20 continues to shift (at a rate of about two inches per year along the
21 San Andreas Fault). As the stresses build up, massive rocks become deformed
22 on either side of the fault but retain their basic positions because of
23 frictional forces holding them together. Eventually the stresses overcome
24 the strength of the rocks causing the masses of rock to snap along the
25 fault and move into a position of lower stress.
26
27

The Hayward fault, belonging to the San Andreas Fault System, transects the City of Berkeley. Like the main San Andreas fault, its displacement is right lateral strike slip, that is, the portion of the City lying on the west side of the fault is moving progressively northward.

Cracks in pavement, culverts and masonry walls indicate that right lateral creep has continued progressively since the last major earthquake. Recent studies by the U. S. Geological Survey suggest that sudden fault displacements on the order of ten feet are possible along the Hayward Fault in the event of a major earthquake.

B. SEISMICALLY INDUCED HAZARDS

1. FAULT DISPLACEMENT

A fault displacement occurs when the plates on one side of a fault move relative to the one on the other side. The San Francisco Bay Area is literally interlaced with numerous faults.

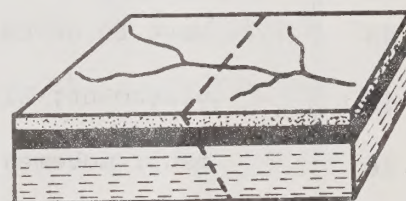
There are three essential aspects of fault displacement that have to be considered: 1) the location of the fault displacement; 2) the amount of displacement; and 3) the sense of fault movement are all extremely important in assessing the likelihood, amount and type of damage that might be produced. First, while fault movement starts at a single point, the accumulated stresses can be relieved along many miles of the fault line. Within a fault zone, displacement may take place along a branch or secondary fault although the greatest probability is that it will occur along the trace of an active fault.

Second, the amount of relative fault displacement is dependent upon the total length of the fault itself. The longer the fault, the greater the amount of displacement that

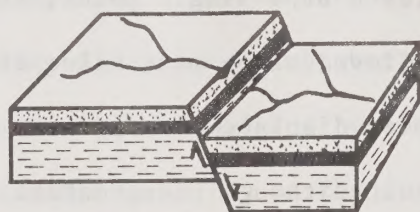
is likely to occur. The greatest single shift in the Bay Area in recent times was 20 feet during the 1906 San Francisco earthquake. It is believed that a high magnitude earthquake along the Hayward Fault would produce a displacement of several feet. Displacements do not have to be large to cause damage. In fact, a displacement as small as one or two inches could cause damage to a building, depending on the building's design/construction and the shaking stresses it experiences. Since, in general, buildings cannot withstand major ground displacement, a reasonable approach to reducing structural damage might well be to avoid construction across or immediately adjacent to active faults.

The third aspect to be considered in assessing the dangers of fault displacement is the sense of movement involved. The sketches below show various types of fault movement:

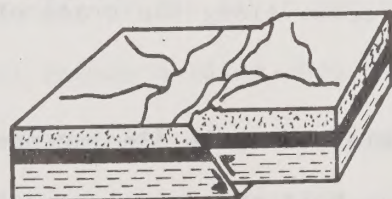
A) Fault movements must always be expressed in relative terms, since it is impossible to tell which side actually does the moving;



EARTH BLOCK BEFORE MOVEMENT



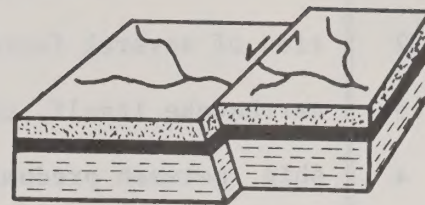
NORMAL FAULT



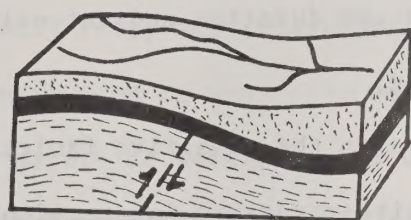
REVERSE FAULT

B) There are two kinds of vertical movement, the normal one involves the downthrow of one block while the reverse fault involves the upthrust of the block. Some mountains in Southern California indicate that during ancient times displacements totaled 10,000 to 15,000 feet;

C) Horizontal movement can be either left lateral or right lateral. Horizontal movement of 20 feet occurred on the San Andreas fault during the 1906 earthquake;



LATERAL FAULT



MONOCLINAL FOLD

D) Monoclinical fold movement is characterized by a permanent flexure or bending of the surface rocks as a result of earthquakes or other geologic phenomena occurring at tremendous depths but without fault displacement at the ground surface.

The San Andreas and its branch faults, including the Hayward Fault, all behave right-laterally so that a future earthquake on the Hayward Fault will most likely produce a right-lateral horizontal displacement of several feet. Vertical displacement along the Hayward Fault (where the crustal plate slips up or down past each other) has not been documented to date.

2. GROUND SHAKING (See Figure 4A)

The ground shaking effect due to earthquake is, by far, the source of greatest damage to buildings and the most apparent sensation felt by people. Ground shaking is the oscillating ground response of earth materials during earthquakes caused by the release of energy in the form of surface and body waves.

1 The effects of ground shaking on structures is dependent on a combina-
2 tion of several factors such as the magnitude, duration and distance of the
3 earthquake itself, the local soil/water saturation conditions, the relation-
4 ship between predominant period of a structure and the predominant period
5 of ground vibration and the structural integrity of the building.

6 The variation in the severity of the effects of ground shaking on struc-
7 tures is dependent on the following factors, or combinations thereof:

- 8 1) Magnitude of the shock and the duration and intensity of the
9 accompanying ground shaking;
- 10 2) Distance from the structure to the causitive fault;
- 11 3) Site characteristic and site-structure interaction; and
- 12 4) Degree of integrity of the structure as a result of design
13 and/or construction.

14 The site characteristic related to site-structure interaction is, for
15 most properties in the City outside the area along the Waterfront, not highly
16 variable and this factor of the ground shaking effects can be considered
17 as having minimal affect on variation in damage to structures.

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Records from past earthquakes tend to suggest that the greatest damage to buildings occurs when tall structures are built over thick, relatively soft, water-saturated sediments and the least damage when they are constructed on very firm bedrock. This characteristic is attributed to the nature of seismic waves whose frequency is reduced as they pass from rocks to less dense materials but whose amplitude is generally increased. The increase in amplitude leads to shaking at the surface which lasts for a longer period of time. History has shown that a flexible structure built next to a fault but on solid ground has withstood ground shaking better than the same structure located on loosely compacted water-saturated material many miles away.

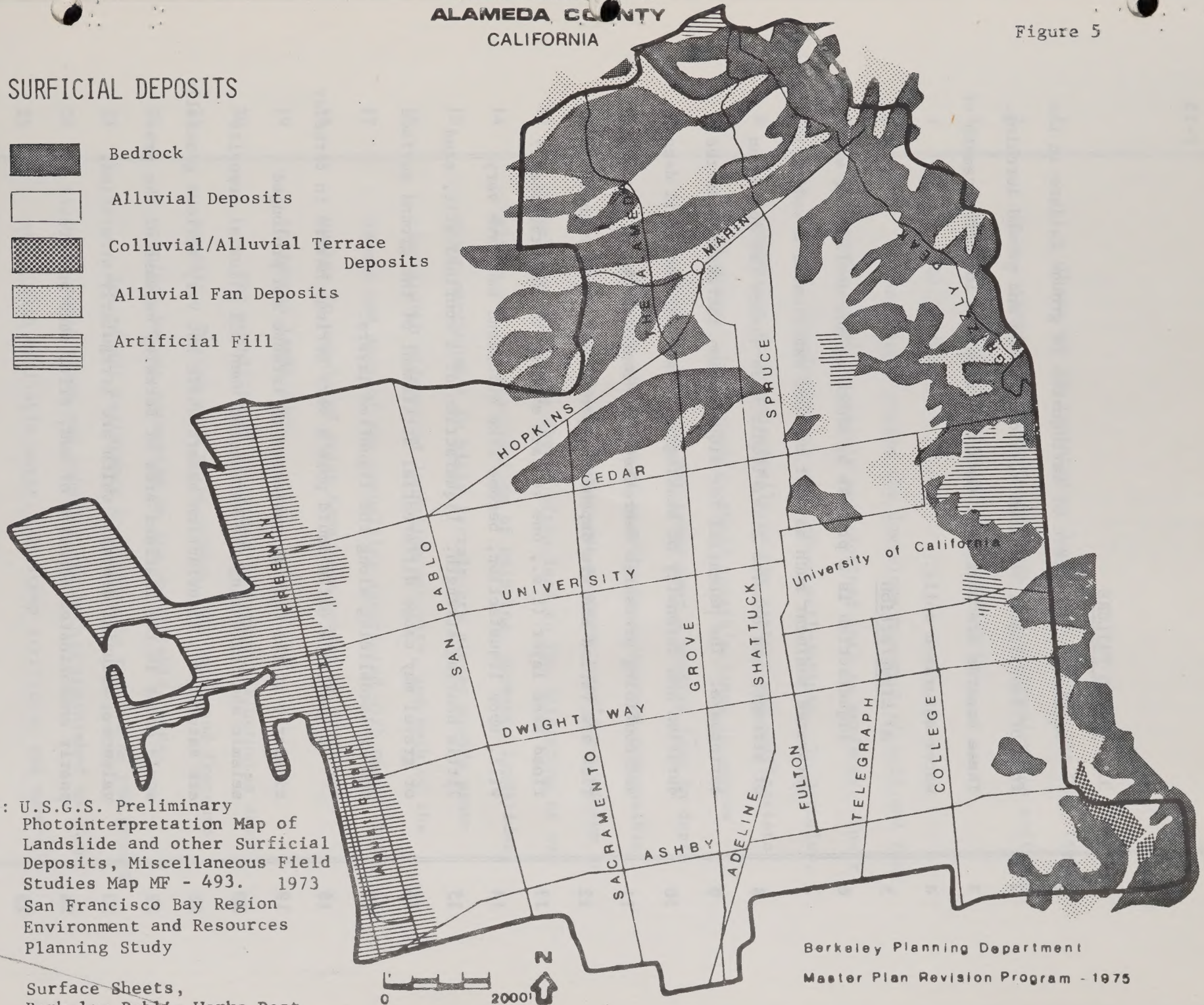
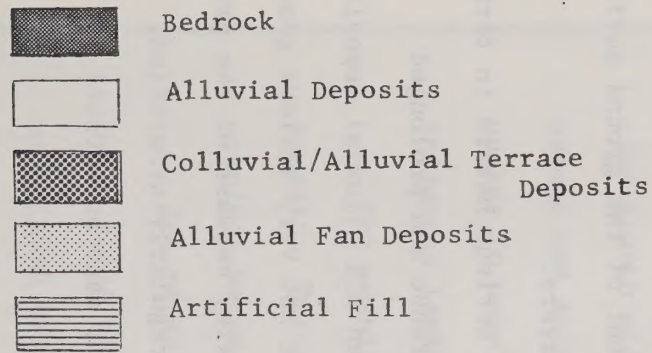
One way of assessing potential building damage is to relate the predominant vibration period of a building to the ground on which it rests. A building can be subjected to greatly modified earthquake motions depending on the local geology (rock, firm soil, or thick wet soil). The greatest damage is more likely to occur when the building and the ground approach the same vibration period. The predominant vibration period of a building can be related in a general way to its height or number of stories. Taller buildings have a longer predominant vibration period (two or more seconds). Consequently, they are oftentimes subject to

1 greater damage when they are located on ground with a longer
2 predominant vibration period (thick, water saturated
3 sediments). Conversely, one or two story buildings with
4 a short predominant period may experience more damage if
5 located on firmer ground.

6 Figure 5 on the following page shows several types of
7 surficial deposits that exist in Berkeley. If the analysis
8 presented above is generally applied to various parts of the
9 city, one can surmise that severe ground shaking would
10 produce considerable damage to the tall buildings in the
11 downtown area because they are located on alluvial deposits
12 (poorly consolidated deposits of mud, silt, sand and gravel
13 deposited in stream beds) whose longer vibration period would
14 be coincident to that of the tall buildings. One or two story
15 buildings with short vibration periods may not experience as
16 much damage when resting on relatively soft and wet grounds.

17 As mentioned previously, local soil conditions and the
18 relationship between predominant periods are only two of many
19 considerations concerning the effects of ground shaking.
20 Other considerations such as the magnitude, distance, fre-
21 quency and duration of a particular shock plus structural
22 design and integrity of construction (quality of materials
23 and workmanship) are also important and therefore should be
24 part of a more complete analysis.

SURFICIAL DEPOSITS



Source: U.S.G.S. Preliminary
Photointerpretation Map of
Landslide and other Surficial
Deposits, Miscellaneous Field
Studies Map MF - 493. 1973
San Francisco Bay Region
Environment and Resources
Planning Study

Surface Sheets,
Berkeley Public Works Dept.

Berkeley Planning Department
Master Plan Revision Program - 1975

3. GROUND FAILURE

Another major effect of earthquakes is ground failure in the form of landslides, subsidence, liquefaction and ground lurching. These hazards are often the result of complete loss of strength of water-saturated soils.

a) Liquefaction

Liquefaction is a process by which an unconsolidated, water-saturated sediment such as silt or sand experiences a sudden loss of strength and behaves like a liquid when shaken (as during an earthquake). The potential for liquefaction increases when the duration and intensity of shaking increases and when soil density and confining pressures decrease. The consequences of liquefaction are varied and are dependent upon many factors. An unconfined sand layer (i.e., one surface exposed to the atmosphere) will, upon liquefaction, become like quicksand and have very little bearing strength. Liquefaction of a confined silt, sand or gravel may cause differential settlement of the ground surface and/or landsliding along the liquefied layers.

Liquefiable soils could pose a very serious hazard in Berkeley particularly if the City is subjected to intense and prolonged seismic shaking during the wet season when all alluvial deposits are saturated. Liquefaction hazard while not very serious generally would occur in the flatland area of Berkeley because of the prevalence of alluvial deposits which are irregularly stratified, poorly consolidated deposits of mud, silt, sand and gravel.

1 There may be isolated or local areas within the City limits
2 (e.g., along some of the creek beds) where cohesionless soils are
3 present and liquefaction potential can exist.

4 b) Landslide

5 Landslides involve the downslope movement of soil and rock
6 material over relatively well-defined failure surfaces. Their
7 lateral boundaries are also often well-defined. In Berkeley,
8 landslides occur principally in the eastern and northeastern
9 hill areas. Individually, their length's range in excess
10 of a thousand feet and may range over a hundred feet in depth.

11 Although the force of gravity is ultimately responsible
12 for their failure and subsequent movement, man's activities as
13 well as earthquake shocks often lead to the triggering of new
14 slides and the reactivation of existing, dormant, landslides.
15 Major earthquakes in hilly terrain are almost always asso-
16 ciated with widespread landslide activity, and much of the
17 damage and many of the casualties associated with major earth-
18 quakes in populated areas have been caused by earthquake
19 triggered landslides.

20 The stability of hillsides in Berkeley fluctuates sea-
21 sonally. During each rainy season, the voids and fracture
22 openings become saturated as the water table rises.

23 Frictional resistance to sliding is reduced as the ground
24 water table rises and cohesive strength is diminished as clays
25 swell with available water. On steep artificial and natural
26
27

1 slopes, seepage pressure associated with ground water flow
2 may further reduce stability. As a result of seasonal loss
3 of strength, the factor of safety of natural and man-made
4 slopes decreases and their susceptibility to failure caused
5 by earthquake-induced shocks increases.

6 Manmade cuts and fills, depending on their location and
7 design in relation to existing and potential slides, may have
8 significantly adverse effects on static as well as an earth-
9 quake induced landslide stability. Grading operations in-
10 volved in the construction of streets and building founda-
11 tions have often had adverse effects on natural slope
12 stability. Improper concentration of storm runoff in land-
13 slide zones has also adversely affected stability and the
14 resulting soil creep and landslide movements may fracture
15 sewer and water in mains, leading to further deterioration
16 of stability.

17 The hazard from seismically-triggered and reactivated
18 landslides is not limited to the Alquist-Priolo geologic
19 hazard zone, but extends throughout a broad area in the hills
20 of Berkeley. Landslides have destroyed and damaged buildings,
21 streets and interrupted water supply, gas and other utility
22 lines. The various types of landslides which occur in Berk-
23 eley present significantly different types and degrees of
24 hazard. In order to specifically define the type, degree
25 and location of hazard zones subject to earthquake-induced
26
27

BERKELEY
ALAMEDA COUNTY
CALIFORNIA

Figure 7

POTENTIAL LANDSLIDE AREAS

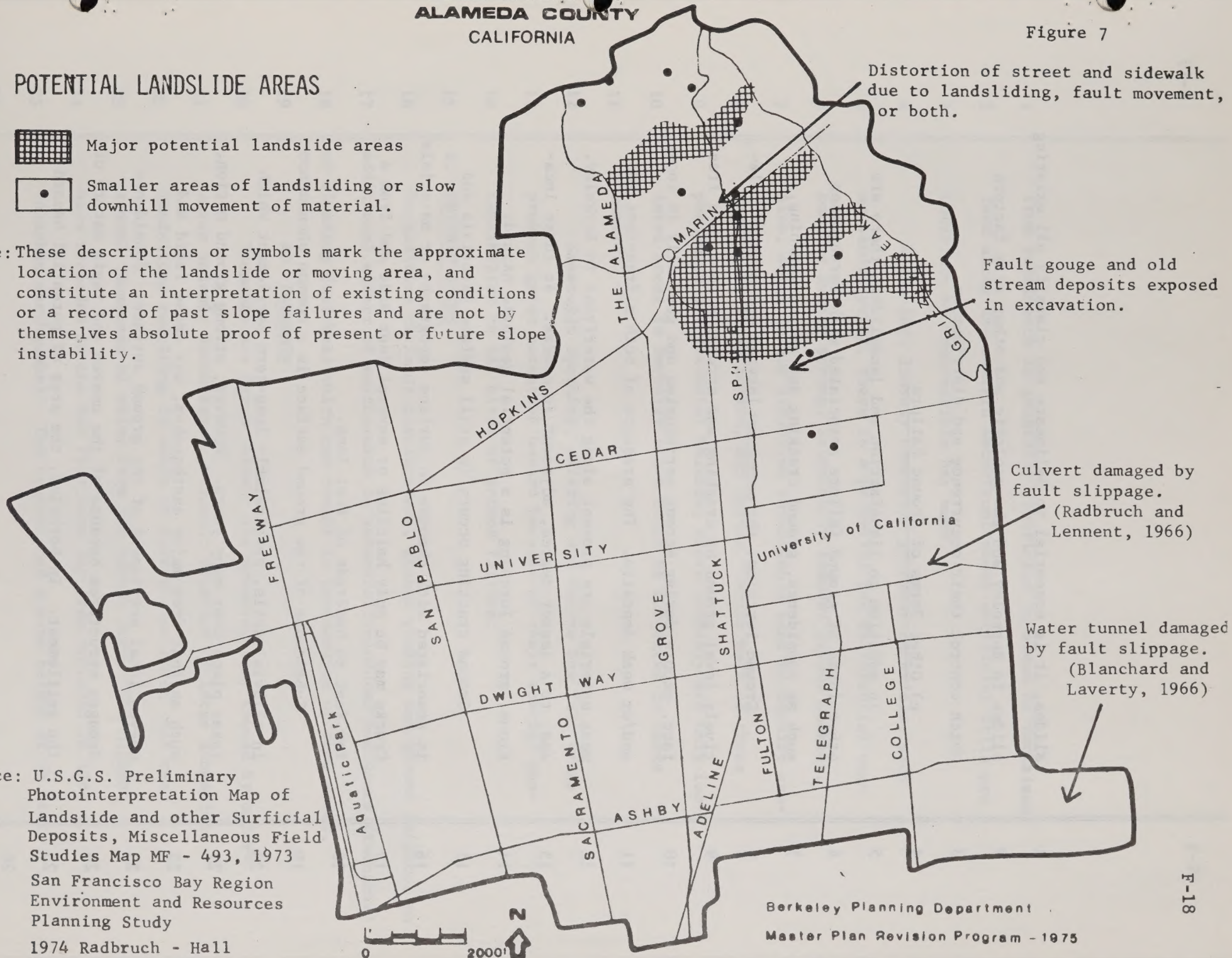


Major potential landslide areas



Smaller areas of landsliding or slow downhill movement of material.

Note: These descriptions or symbols mark the approximate location of the landslide or moving area, and constitute an interpretation of existing conditions or a record of past slope failures and are not by themselves absolute proof of present or future slope instability.



Culvert damaged by fault slippage.
(Radbruch and Lennett, 1966)

Water tunnel damaged by fault slippage.
(Blanchard and Lavery, 1966)

Source: U.S.G.S. Preliminary
Photointerpretation Map of
Landslide and other Surficial
Deposits, Miscellaneous Field
Studies Map MF - 493, 1973
San Francisco Bay Region
Environment and Resources
Planning Study

1974 Radbruch - Hall
Hayward Fault Map
U.S.G.S.

Berkeley Planning Department
Master Plan Revision Program - 1975

1 slides, it is essential to delineate and classify all existing
2 slides in Berkeley and the geologic and other site factors
3 which control their occurrence and distribution.

4 c) Other Forms of Ground Failure

5 In addition to liquefaction and landslides, there are
6 other forms of ground failure associated with earthquakes
7 such as subsidence, ground cracking and ground lurching.

8 Ground lurching, the permanent lateral movement of rela-
9 tively level ground by cracking and spreading towards a free
10 face, occurs during strong earthquakes and generally in loose
11 and/or weak deposits. The presence of both a free-face and
12 weak materials are present along the waterfront in Berkeley,
13 and, to a lesser degree, adjacent to creeks. At these loca-
14 tions, ground lurching is a potential geologic hazard.

15 Ground cracking occurs in still surface materials and
16 is associated with changes in surface topography or materials.
17 Cracks may be only hairline or several feet wide and from a
18 few feet to hundreds of feet long.

19 Subsidence of the ground surface is a common phenomenon
20 in alluvial soils, particularly long-term settlement which
21 takes place over many years. However, strong ground motion,
22 such as that from major earthquakes, may cause rapid and
23 uneven local settlement of the ground surface. Subsidence
24 damages structures because of the uneven and rapid nature of
25 the settlement. In Berkeley, the area of potential hazard
26
27
28

1 from subsidence is generally restricted to areas of reclaimed
2 land along the western Waterfront where artificial fills are
3 underlain by compressible bay muds.

4 Where dry, loosely compacted granular materials, such
5 as sands, exist, there is a potential for differential com-
6 paction during strong, seismically induced ground shaking.
7 Also, soils in any liquefied layer would tend to densify sub-
8 sequent to liquefaction, and settle. While both of these
9 phenomena are potential hazards, there probably are only iso-
10 lated areas in Berkeley which could be subjected to these
11 hazards.

12 Generally speaking, existing and future bay fill areas
13 present great potential hazard because of their special sus-
14 ceptibility to all kinds of ground failure.

15 4. SEISMIC WAVES

16 In addition to fault displacement, ground shaking and ground failure, an
17 additional effect of earthquakes is seismically-induced sea waves (tsunamis)
18 or sloshing (seiches) which can result in inundation of some areas.

19 a) Tsunamis

20 Tsunamis are large seismic sea waves usually caused by under-
21 water seismic disturbance, volcanic eruption or large submarine
22 landslides resulting in waves of destructive force that can
23 travel thousands of miles from the source area. The highest
24 wave recorded in the San Francisco Bay Area occurred in 1964
25 (Alaskan earthquake). The tsunami had a wave height of $7\frac{1}{2}$ feet
26
27

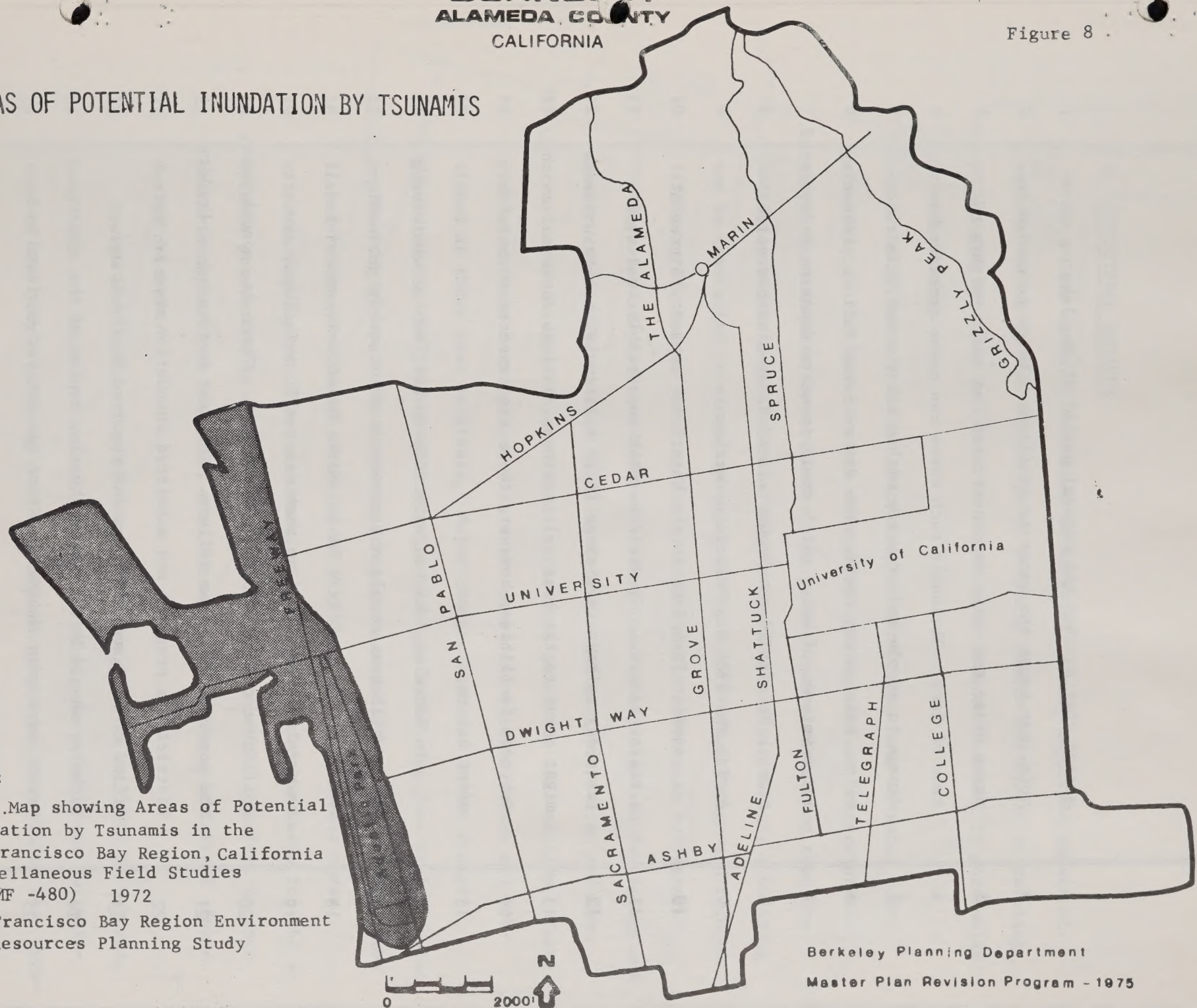
1 near the entrance to San Francisco Bay and about 3 3/4 feet
2 at the City of Richmond. Studies of the tsunami hazard in
3 San Francisco Bay assume a 25% risk of a 20 foot high wave at
4 the Golden Gate Bridge would occur once every 200 years. The
5 wave would be reduced 50% due to travel distance when it
6 reaches the Berkeley shoreline. So the wave would theoreti-
7 cally only be ten feet high. This height, however, is the
8 crest to trough distances so that the actual height would be
9 only five feet above the tide level at that time.

10 In Berkeley, all of the Waterfront area plus a few blocks
11 of the industrial area south of University Avenue would be
12 subject to flooding in the event of a 20-foot high tsunami
13 at the Golden Gate Bridge (See Figure 8). The Southern
14 Pacific Railroad embankment actually provides a 15-foot
15 barrier for such a wave between University Avenue and Ashby
16 Avenue. Major damage and loss of life would be confined to
17 the near shore and harbor areas. It is in this area that the
18 greatest force of the waves would occur. Both the depth of
19 inundation and the water velocity diminishes rapidly as the
20 wave travels inland.

21 b) Seiches

22 Seiches are earthquake-generated waves within enclosed or
23 restricted bodies of water (such as lakes and reservoirs)
24 which act like the sloshing of water in a bowl during ground
25 shaking. Earthquake-generated ground waves, which have a
26
27

AREAS OF POTENTIAL INUNDATION BY TSUNAMIS



SOURCE:

U.S G.S. Map showing Areas of Potential
Inundation by Tsunamis in the
San Francisco Bay Region, California
(Miscellaneous Field Studies
Map MF -480) 1972

San Francisco Bay Region Environment
and Resources Planning Study

Berkeley Planning Department
Master Plan Revision Program - 1975

1 period that matches the natural period of the lake or reser-
2 voir, may cause the water to oscillate. Waves generated in
3 areas where the water is constricted can reach heights of
4 tens of feet. Obviously such waves can cause considerable
5 damage to people and property within their reach. In reser-
6 voirs, seiches may overtop the dam or cause failure, releasing
7 large volumes of water which could inundate downstream developed
8 areas. No significant seiche-related damages were reported
9 during the 1906 San Francisco earthquake.

10 Aquatic Park lake in the Waterfront area could present
11 a seiche hazard. It would be most susceptible to a short
12 frequency seismic wave since it is relatively shallow. Damage
13 might occur to the boat sale business, various docks and to the
14 restroom facilities; however, these are expected to be of a
15 minor nature.

16 In Berkeley, the ten water reservoirs found predominantly
17 in the hill area should not present a major seiche problem.
18 According to the City's Public Works Department, all the
19 reservoirs are covered so that water will most likely not
20 spill over the top during an earthquake. There is, nonetheless,
21 the possibility of dam failure. The East Bay Municipal Utility
22 District has prepared and submitted inundation maps to the
23 Office of Emergency Services (as required by the State).
24 Berkeley should be receiving shortly, copies of the appro-
25 priate maps even though the State has not yet reviewed and
26 approved them.
27

5. STRUCTURAL HAZARDS

1 In a City as fully developed as Berkeley, a very important aspect of
2 seismic safety is the mitigation of property damage and injury in existing
3 structures that can be caused by seismically induced hazards, in particular
4 ground shaking.

5 Although seismic design standards and techniques have advanced con-
6 siderably in the last three to four decades, the complete interrelation-
7 ships of earthquake forces, underlying geology and construction type are
8 not fully understood. Based on today's level of seismic design, a building
9 can be constructed to withstand major shocks with minimal damage and reduced
10 life hazards, but no building can be made totally earthquake resistant.

11 Berkeley adopted the Uniform Building Code as its standard for design and
12 construction. The Uniform Building Code has had aseismic design and con-
13 struction provisions incorporated in the Code since the 1927 edition. These
14 provisions have been updated with each succeeding edition, which are pub-
15 lished at three year intervals. Major changes occurred in the design
16 provisions in the 1946 to 1949 edition based on work being done by interested
17 engineering groups. The Structural Engineers Association of California pub-
18 lished recommended design criteria in 1959 and has been updating these
19 criteria regularly. These recommendations have provided the basis for the a-
20 seismic provisions in the Uniform Building Code since 1960. Before seismic
21 criteria appeared in the Code, wind forces provided the only lateral force
22 design criteria.

23 Design and construction of some structures in Berkeley, such as schools,
24 hospitals and State and Federal owned properties, are outside the jurisdic-
25 tion of the City's building code regulations. Agencies responsible for regu-
26
27

AGE OF HOUSING STOCK (35 YEARS OR MORE)



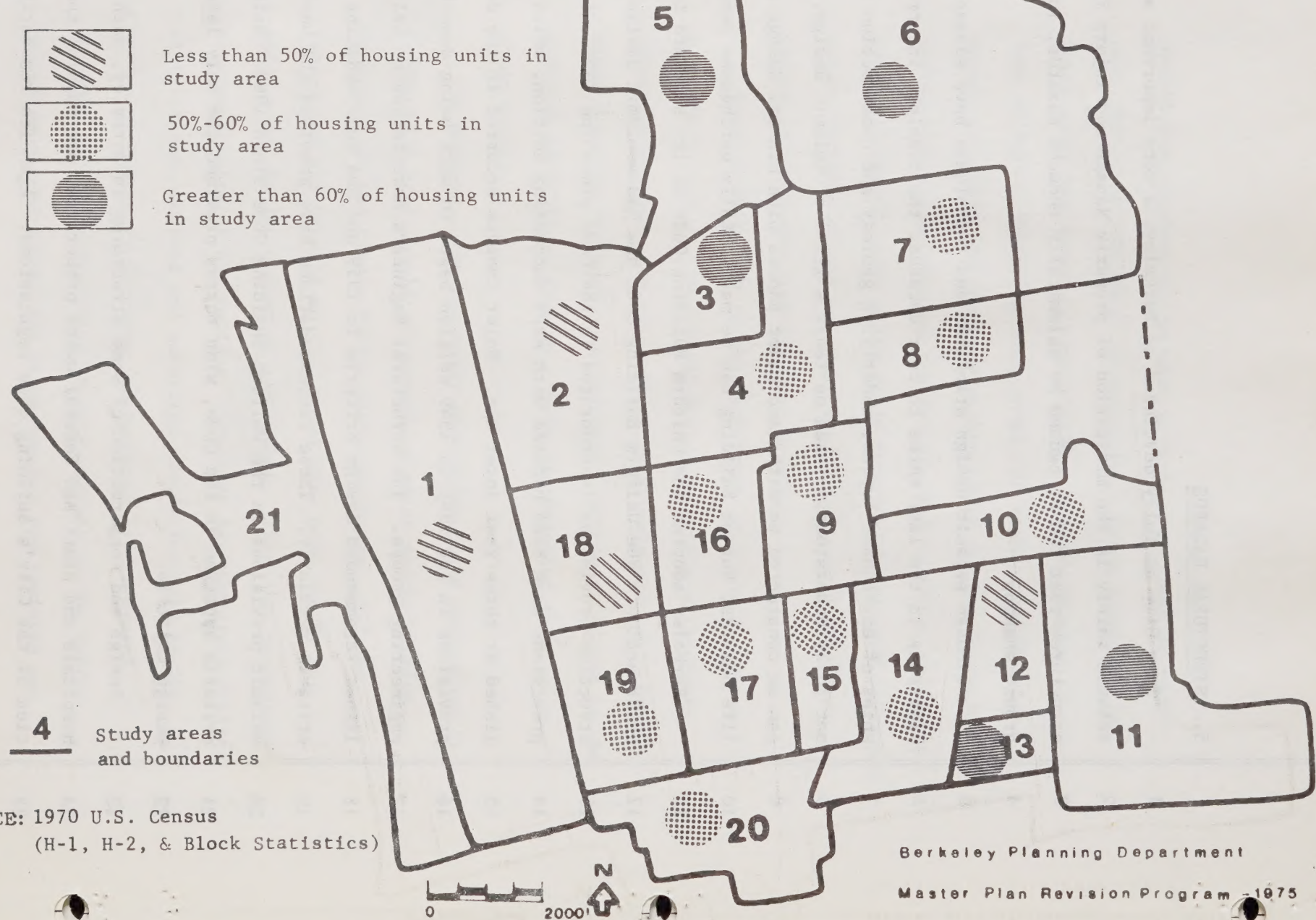
Less than 50% of housing units in study area



50%-60% of housing units in study area



Greater than 60% of housing units in study area



SOURCE: 1970 U.S. Census
(H-1, H-2, & Block Statistics)

1 lation of these structures generally have adopted seismic criteria as res-
2 trictive as Berkeley's and in some cases, more restrictive.

3 Because of time and financial limitations, no field survey was conducted
4 to estimate the number of structures in Berkeley that could be classified
5 as seismically deficient. Based on 1970 U.S. Census statistics, at least
6 60% of the housing stock was built before seismic design standards became
7 part of the Uniform Building Code (See Figure 9). Many of non-wood older
8 structures probably present a hazardous condition.

9 In very general terms, types of construction can be related to seismic
10 resistance performance even though such relationships can be somewhat mis-
11 leading based solely on materials or types of construction. The historical
12 record provides evidence that certain building types respond to seismic
13 forces with little damage incurred while other types have suffered excessive
14 damage and collapse.

15 Buildings of weaker and/or more brittle materials, such as unreinforced
16 masonry (brick, stone or hollow concrete masonry walls without embeded steel
17 bars), experience greater damage due to severe ground shaking than buildings
18 of stronger and/or more flexible materials. In addition, portions of buildings
19 such as unreinforced masonry chimneys, unreinforced parapets and appendages
20 or appendages whose reinforcing has deteriorated will be damaged by severe
21 ground shaking and do present a hazard. The City has taken one step toward
22 reducing the hazard involved with these features by adoption of the "Parapet
23 Ordinance" in 1972. Buildings in the central core of the City which have un-
24 reinforced parapets and ornamental appendages subject to the provisions of
25 the Ordinance have been preliminarily mapped (See Figure 10).
26
27

BERKELEY
ALAMEDA COUNTY
CALIFORNIA

Figure 10

AREAS WITH POTENTIALLY HAZARDOUS
APPENDAGES IN THE DOWNTOWN AREA

5
Number of buildings in each block with
potentially hazardous appendages



SOURCE: Dept. of Inspection Services,
1973

1 Various other structural deficiencies which may be present in
2 some of Berkeley's buildings are inadequately secured elevator
3 equipment; inadequately secured mechanical equipment, such as
4 motors, water heaters and heating equipment; inadequately
5 braced openings in walls; and large exterior glass areas with
6 inadequate framing to transfer lateral forces from the building
7 to the ground.

8 In addition to buildings, there are other types of struc-
9 tures which are of major importance with respect to seismically-
10 induced hazards. Structures such as utilities, transportation
11 and communications systems are essential to the city's welfare,
12 safety and continued functioning.

13 Gas and electrical facilities are likely to be damaged by
14 strong ground shaking or fault displacement, particularly since
15 some of the utility lines cross the Hayward Fault. Fortunately,
16 Pacific Gas and Electric Company designs its installations to much
17 more rigid standards than required by building codes and incor-
18 porates seismic considerations so that hazards are decreased
19 considerably. Nonetheless, the probability of fires and explo-
20 sions still exists which could result from exposed transmission
21 lines or ruptured pipelines. Potential hazards may be alleviated
22 by constructing lines above grade or by installing shut-off valves.

23 Water related facilities such as pumping stations, reservoirs,
24 and pipelines could also experience some damage. In Berkeley,
25 there are various water supply lines that run through the Hayward
26
27

1 Fault and through potential landslide areas. In the event of a
2 major earthquake, Berkeley's fire-fighting capability could be
3 affected. There is also the possibility of inundation due to
4 failure of water reservoirs up in the hill area.

5 A total breakdown of the communication system is not envisioned,
6 although telephone systems could be damaged. Pacific Telephone
7 Company, like PG&E, considers seismic effects in its design of
8 facilities. Emergency communication is nonetheless possible
9 over commercial radio, television, and short wave radio.

10 Berkeley's transportation system could be seriously affected
11 by a major earthquake. The Eastshore Freeway may liquefy and
12 fail under heavy shaking or it may be inundated by a tsunami.
13 Panoramic Way and other hill areas with narrow and winding
14 streets may face the problem of isolation from the rest of the
15 city since the flow of rescue vehicles, fire fighting equip-
16 ment and supplies could be seriously hindered. Great potential
17 damage can be related to the likely collapse of freeway over-
18 passes which would have an adverse effect on the accessibility
19 and usability of the Bay Bridge.

20 C. SUMMARY

21 Strong seismic activity in the Bay Area could cause any or
22 all of the following effects: ground or fault displacement, ground
23 shaking, liquefaction, landsliding, tsunami, seiche and structural
24 hazards. The action of these resultant effects on man, building
25 and essential community facilities may create minor to catastrophic
26 disruption of urban life in Berkeley.

1 It is believed that the next major earthquake along the Hayward Fault
2 will have a 7+ magnitude on the Richter Scale, probably producing a
3 ground displacement of several feet. Ground movement is expected to be
4 mainly a right lateral movement with some minor vertical movement. Areas
5 of Berkeley immediately adjacent to the Hayward Fault that contain
6 structures and utilities built across the fault itself or traces of it
7 will definitely experience damage.

8 Generally speaking, the city's flatlands will experience a greater
9 amount of seismic ground shaking than the Berkeley hills since soft
10 water-saturated alluvial type of sediments underlie most of these areas.
11 In particular, tall unreinforced concrete and masonry structures sit-
12 uated on relatively deep soils will be subjected to strong ground shaking
13 because of the amplifying effects that occur when the vibrational period
14 of the soil is similar to that of the tall building.

15 Liquefaction involves a ground surface's sudden loss of bearing
16 strength. Areas likely to liquefy consist of poorly-compacted artificial
17 fill or wet and unconsolidated alluvial/colluvial soils. The waterfront
18 area and areas in the Berkeley flatlands immediately adjacent to creeks
19 and water streams present a major potential for liquefaction hazard.

20 There are several conditions that increase the likelihood of land-
21 slides during an earthquake. Factors such as the steepness of slope,
22 the presence of soft and unconsolidated sediments, plus extensive water
23 content in the ground are all present in the north hills area. This
24 section of Berkeley is therefore most susceptible to landslides.

25
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1 In terms of seismically-induced waves, the waterfront area will be
2 inundated by a tsunami in the event of an earthquake that produces a 20-
3 foot high wave at the Golden Gate Bridge. In addition, Aquatic Park
4 could seiche producing minimal damage to some existing docks and boat
5 sales businesses. The various water reservoirs, located primarily in the
6 hills area, do not present a seiche problem since all of them are covered.
7 A major shake could, nonetheless, lead to dam failure and inundation of
8 surrounding areas.

9 Structural hazards associated with earthquakes include damage to
10 buildings as well as to major utilities, transportation and communication
11 systems. Berkeley has numerous unreinforced masonry buildings, par-
12 ticularly in the downtown area, which could be expected to incur consider-
13 able damage. Residential wood frame houses will most likely perform well
14 in earthquakes, although deficiencies such as inadequately secured
15 mechanical equipment and large exterior glass areas might present potential
16 danger.

17 Furthermore, Berkeley is faced with the problem of the water, elec-
18 tricity and natural gas distribution systems crossing the Hayward Fault.
19 Most of the service lines will be ruptured by any major amount of displace-
20 ment from a 7+ magnitude earthquake, thereby presenting potential fire,
21 safety and health risks. It is not expected that communications facilities
22 will be severely affected although the city might have to resort to
23 commercial radio, television and short-wave radio. In terms of damage to
24 the transportation system, freeway overpasses could collapse, forcing
25 the use of alternative routes and isolating parts of the city from
26
27

1 emergency services. The hill areas with narrow winding roads and the
2 potential for landslides pose such potential risk.

3 It should be strongly emphasized that the potentially hazardous areas
4 of Berkeley have been outlined very roughly on the basis of available
5 information. People should not necessarily feel that their homes will
6 all experience damage just because they are located within a hazardous
7 area. Conversely, people should not feel "safer" because they live just
8 outside the roughly outlined hazardous areas of Berkeley. There are many
9 variables that contribute to the danger or safety of an area. For
10 example, a very well constructed wood-frame house immediately adjacent to
11 a fault could experience less damage than a poorly-constructed house
12 located farther away from the fault in a less hazardous area. In order to
13 assess the risk potential of individual parcels of land or particular
14 buildings (especially in high risk areas and where not much information is
15 available), a more detailed soils, geologic and/or structural report should
16 be prepared.

II. FIRE HAZARDS

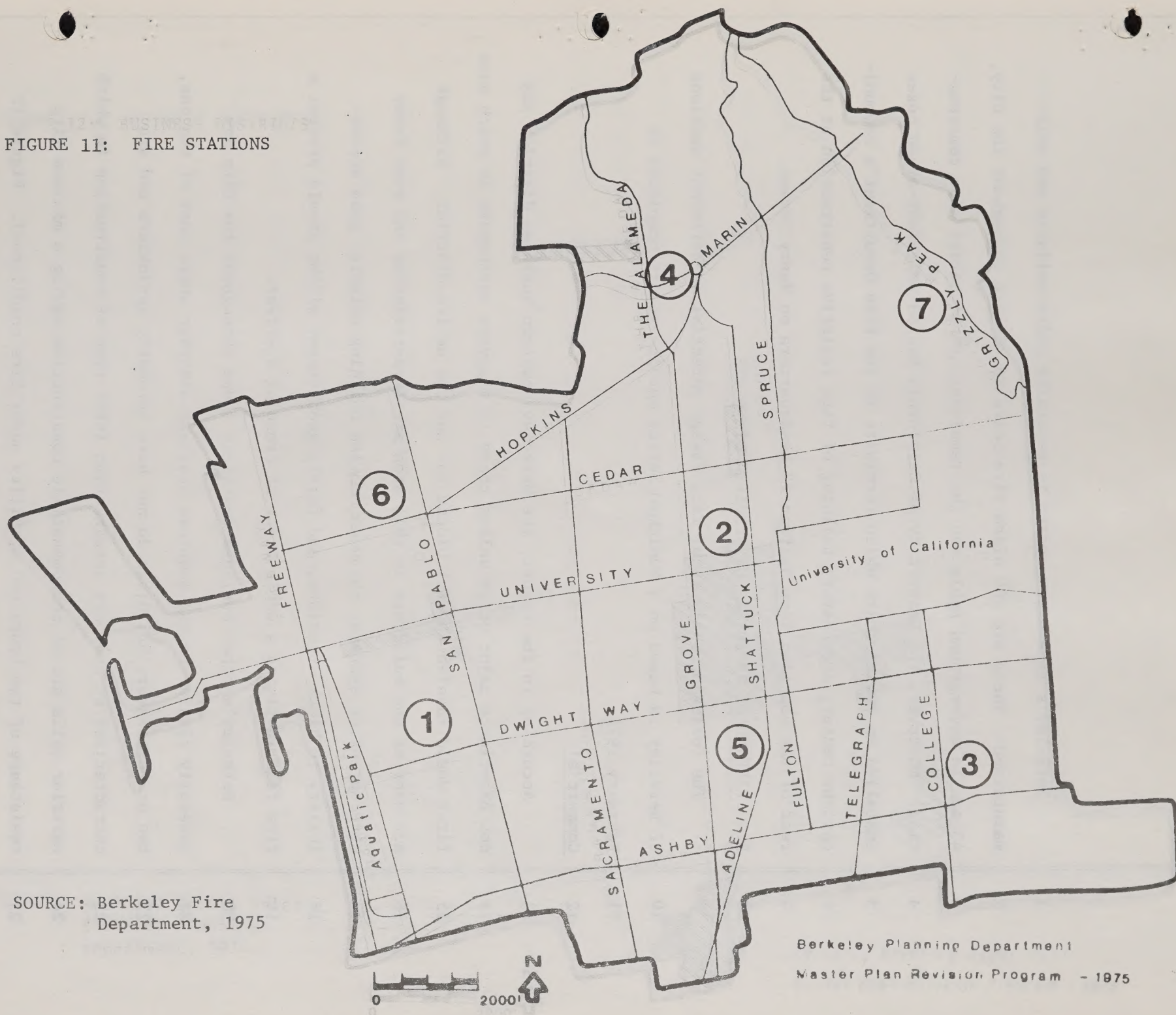
A. GENERAL

Under normal circumstances, Berkeley's fire-fighting capabilities are quite good. The Berkeley Fire Department, although somewhat understaffed, has an adequate number of engine companies (eight of them) to meet the basic requirements of the City. There is one engine company, consisting of four men, per fire station with the exception of the downtown fire station which has two companies. Figure 11 on the following page shows the location of Berkeley's seven fire stations. In addition, the Fire Department has three ladder companies and one squad company in service. If, however, under abnormal circumstances, Berkeley is threatened by a very extensive fire, most likely due to a major earthquake, it can rely on its mutual aid pacts with adjoining cities such as Oakland, Albany and El Cerrito. (These cooperative agreements are not always reliable because in the event of a major disaster, adjacent cities will be quite busy taking care of their own communities.)

An adequate supply of water is available to the City. Water in Berkeley and several neighboring communities in Alameda and Contra Costa counties is provided by the East Bay Municipal Utility District (EBMUD). Reliability of the water system is generally very good, but supply could be severely reduced by a major movement along the Hayward Fault since it cuts all major channels of supply to the regions west of the Berkeley Hills. In particular, earthquake damage to the Claremont Water Tunnel, which normally supplies approximately 90% of the water used in Berkeley, could be quite detrimental.

As of August 1973, Fire Department records showed a total of 1644 municipally owned hydrants in the City. The University of California Campus has an additional 48 hydrants. The average area served by each hydrant is 150,000 square feet in "typical" residential districts.

FIGURE 11: FIRE STATIONS



SOURCE: Berkeley Fire Department, 1975

Berkeley Planning Department
Master Plan Revision Program - 1975

1 Berkeley's fire alarm system is generally quite reliable and well-
2 maintained. There are 260 alarm fire boxes in service throughout the City,
3 43 are in underground cable and the remainder are of aerial wire construc-
4 tion. Moreover, the University of California has 53 privately-owned boxes
5 installed on two circuits which terminate in the Fire Department's communi-
6 cations center, a one-story building of fire resistive construction at the
7 rear of the downtown Fire Station #2 headquarters on Henry Street.

8 B. FIRE DAMAGE POTENTIAL OF SPECIFIC DISTRICTS

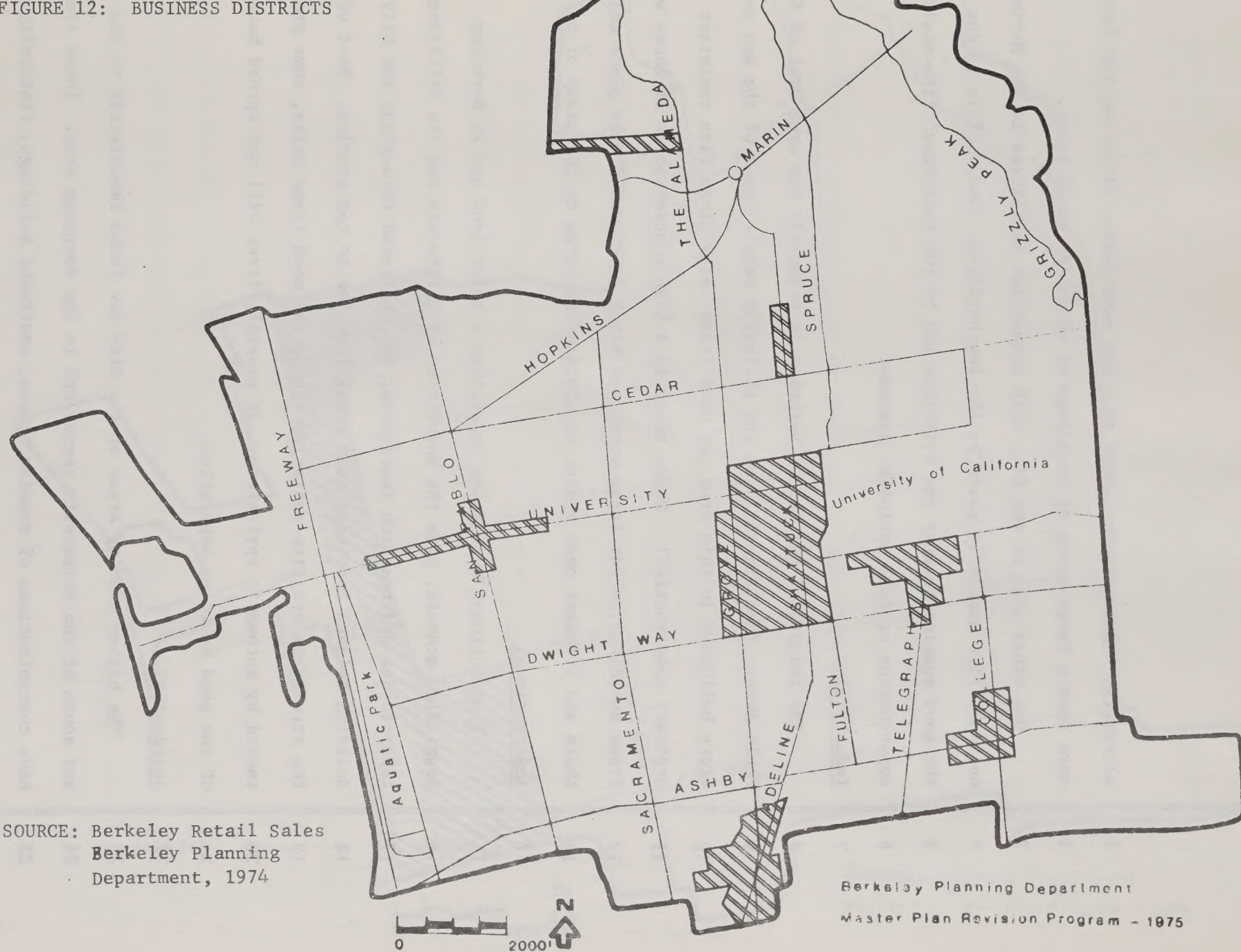
9 The following analysis of fire damage potential in different sections
10 of Berkeley is based on a Municipal Survey Service report completed in
11 February 1974.

12 Commercial

13 According to the report, the Berkeley downtown business district may
14 not experience major fires unless there is a severe earthquake in which case
15 fires would involve several blocks but not the entire district. Although
16 not many of the buildings in this area are fire-resistive and even fewer
17 have sprinkler systems, the generally low building heights, good access-
18 ibility to block interiors, and fairly good street widths should prevent a
19 fire from involving a whole block or crossing a street.

20 Berkeley's other business districts found throughout the City are
21 generally similar to the downtown business district where most of the one,
22 two or three-story buildings do not have automatic sprinklers and are
23 characterized by ordinary construction (that type of construction in which
24 exterior walls are of noncombustible construction having a minimum fire
25 resistance of two hours and stability under fire conditions). Figure 12
26 on the following page shows the general location of the City's business
27

FIGURE 12: BUSINESS DISTRICTS



SOURCE: Berkeley Retail Sales
Berkeley Planning
Department, 1974

Berkeley Planning Department
Master Plan Revision Program - 1975

1 districts. Again, in the event of a big earthquake, fires may not involve
2 more than a large group of buildings or an entire block front.

3 One other area of the City with commercial facilities is the Marina where
4 no major fire hazard is posed by the few buildings there. This is due to
5 the good spacing between the buildings and to the buildings' fire-resistive
6 construction or full sprinkler systems.

7 Industrial

8 The industrial section of Berkeley is primarily the area west of San
9 Pablo Avenue (See Figure 13 on the following page). Most of the one and two-
10 story buildings in this area are wood frame units (less fire resistant than
11 ordinary construction). Where there is a high concentration of these wood
12 frame buildings, a few large group and block fires would take place unless
13 there are frequent open spaces to contain the fires to the group of origin.

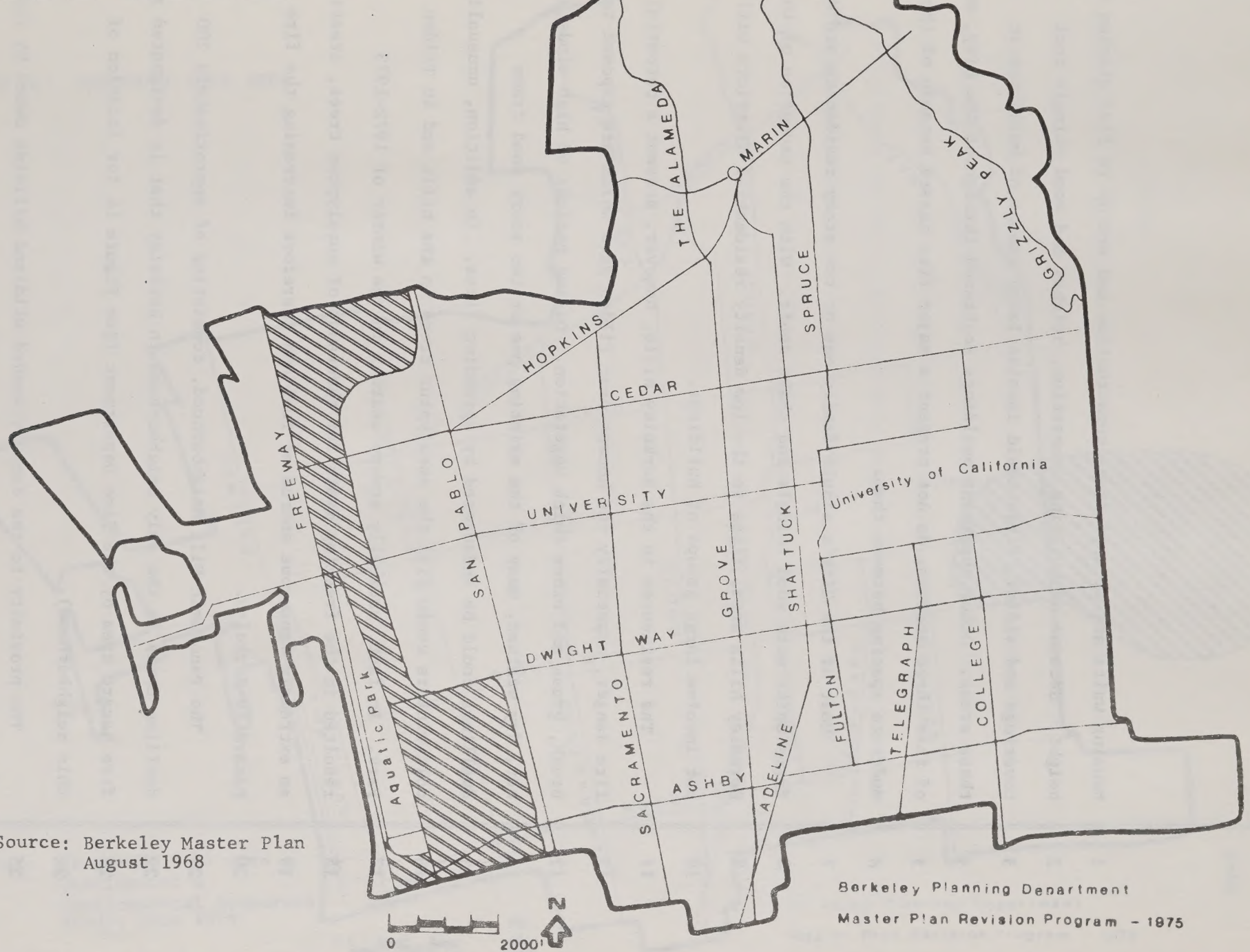
14 Institutional

15 Institutional activities constitute a major land use in Berkeley.
16 Hospitals, schools, plus the University of California and its affiliated
17 laboratories and research institutes, are scattered throughout the City.
18 Building heights for these uses range from one to ten stories. Most of
19 the structures are fire-resistive with a few wood frame units, some pro-
20 tected by automatic sprinklers. In general, fires will not spread because
21 of the good building separation.

22 Residential

23 The higher density areas of the City are found immediately to the north
24 and south of the University campus and in the downtown area. These areas
25 have concentrations of rooming houses, apartment buildings, fraternity and
26 sorority houses where single-person households reside. A number of the
27

FIGURE 13: INDUSTRIAL AREA



Source: Berkeley Master Plan
August 1968

Berkeley Planning Department
Master Plan Revision Program - 1975

1 housing units are of wood frame construction and are up to five stories in
2 height. Because of building congestion, heights and wood shingle roof
3 coverings and siding, fires could involve large groups of buildings in
4 these areas. Other apartment buildings scattered throughout the City, most
5 of them three stories, do not present a major fire hazard because of the
6 moderate spacing between them.

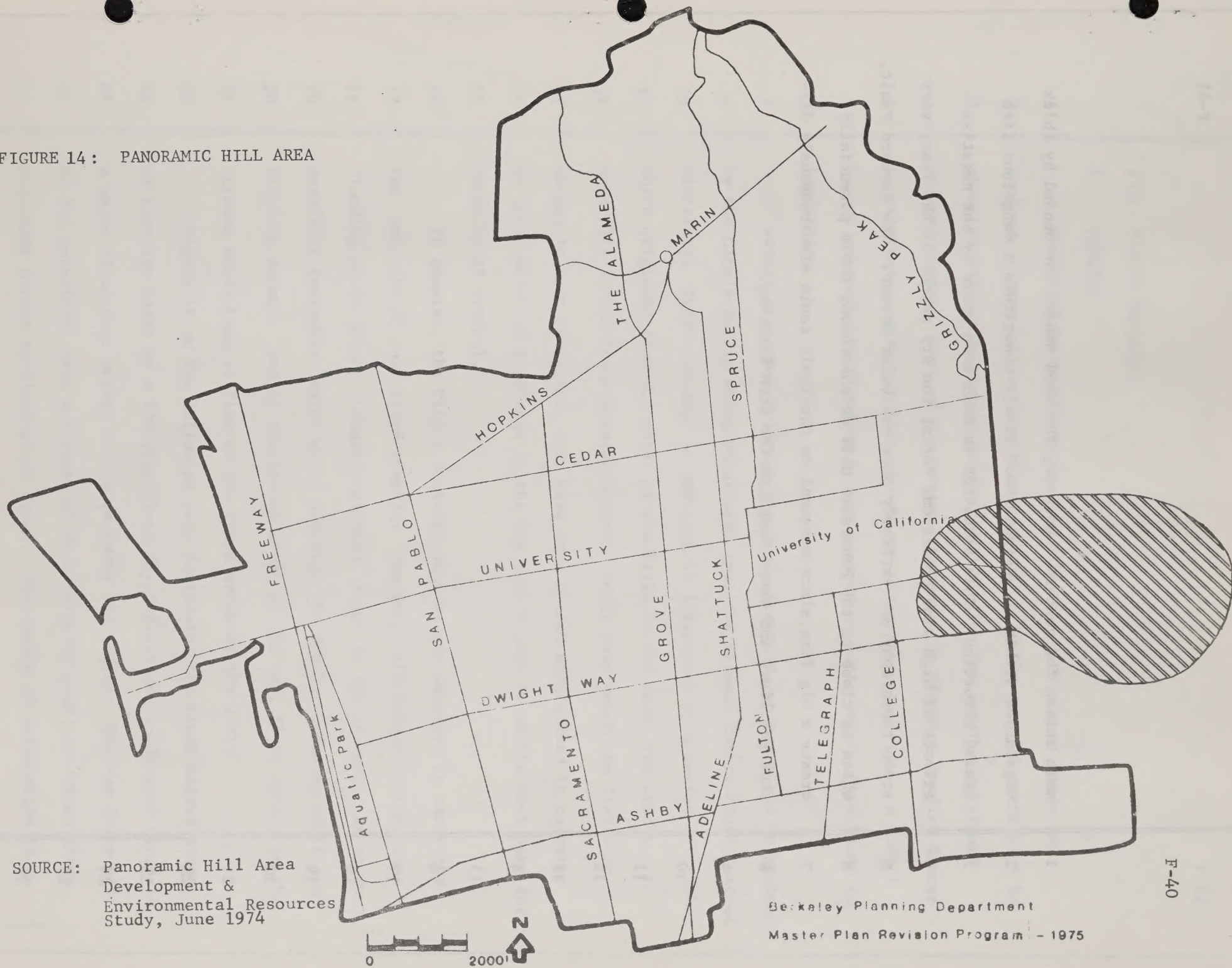
7 Most of the City's single family one or two story residences are wood
8 frame units with wood shingle and shake roofs. With the exception of the
9 Berkeley hills area, fires in the low density residential districts will
10 not involve large groups of buildings.

11 The residences in the Berkeley hills, however, present a potential
12 fire danger, especially the houses near Tilden Park which are exposed to
13 brush, grass and other thick vegetation. During periods of high winds and
14 hot, dry weather, many of the existing one or two story wood frame
15 dwellings could be endangered by spreading fires. In addition, unusually
16 cold winters could kill the eucalyptus trees in the hills and in Tilden
17 Park. In fact, unusually severe weather in the winter of 1972-1973
18 resulted in the freezing death for thousands of eucalyptus trees, creating
19 an extremely dangerous source of fuel and therefore increasing the fire
20 hazard in Berkeley.

21 The Panoramic Hill neighborhood, consisting of approximately 200
22 dwelling units is the only neighborhood in Berkeley that is designated a
23 fire hazard area by the Fire Department (See Figure 14 for location of
24 this neighborhood).

25 The proximity to the densely wooded wildland hillside owned by the
26 University of California and the East Bay Regional Park District is the
27

FIGURE 14: PANORAMIC HILL AREA



SOURCE: Panoramic Hill Area
Development &
Environmental Resources
Study, June 1974

Berkeley Planning Department
Master Plan Revision Program - 1975

1 main reason for concern. However, the wood houses surrounded by thick
2 vegetation within the neighborhood itself constitute a dangerous fire
3 hazard situation. This situation is made even worse by the negative
4 effects of high wind conditions during the dry season of the year, very
5 steep topography and extremely poor vehicular access. The Hayward Fault,
6 which is close to the Panoramic Hill neighborhood, could potentially
7 create a big fire since movement on the fault could simultaneously dis-
8 rupt gas lines and water supplies for fire fighting.

III. FLOOD HAZARDS

A. GENERAL

1 According to estimates by the California Division of Mines and
2 Geology, losses in the State due to flooding in the next 25 years will be
3 about \$6 billion (compared to about \$20 billion for earthquake ground
4 shaking alone). Most of the hazards presented by flooding involve damage
5 to structures, although life losses are often an outcome too. A direct
6 hazard presented by flooding is the erosion of soils which often leads to
7 landslides.

8 Berkeley's storm drainage system is designed, operated and maintained
9 by the City's Public Works Department (not the Alameda County Flood Control
10 District). Storm drainage is provided in large part by a series of creeks
11 which originate from the crest of the hills to the east. The creeks
12 generally follow steep natural channels until they reach the flatlands
13 where, in most instances, they have been placed underground in culverts
14 to their point of discharge in the Bay (See Figure 15 on the next page for
15 location of creeks).

16 In general, the City's drainage systems are adequate to carry the
17 ten and even 25 year storm runoffs. However, with larger storms, some
18 flooding would occur, primarily as "sheet flow" in the streets. As storm
19 magnitude increases, water would overflow the creeks producing additional
20 flooding damage. Due to the ground slope to the bay, flood waters in the
21 streets would tend to flow to the lower areas of the City.

22 Figure 16 on the following page delineates the flood hazard areas
23 of Berkeley based on a 100-year flood (by definition, a 100-year flood is
24 a major flood that occurs only once every 100 years). The map shows all
25 of the waterfront area and parts of West Berkeley plus some areas along
26 Claremont Avenue as flood-prone areas. The source of information is a
27

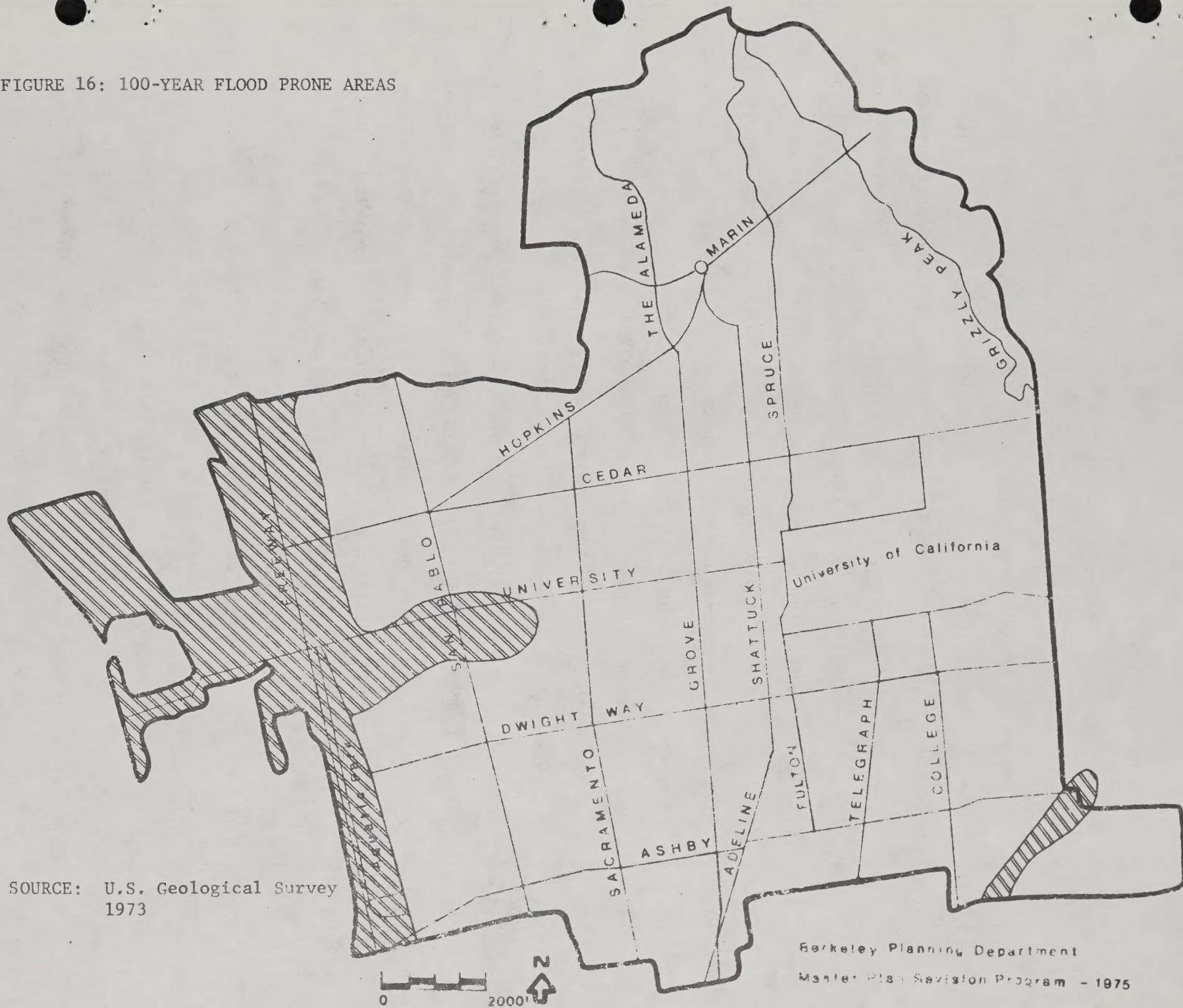
FIGURE 15: CREEKS

— Above Ground
 --- Underground



SOURCE: Master Plan Revision Committee, 1975

FIGURE 16: 100-YEAR FLOOD PRONE AREAS



SOURCE: U.S. Geological Survey
1973

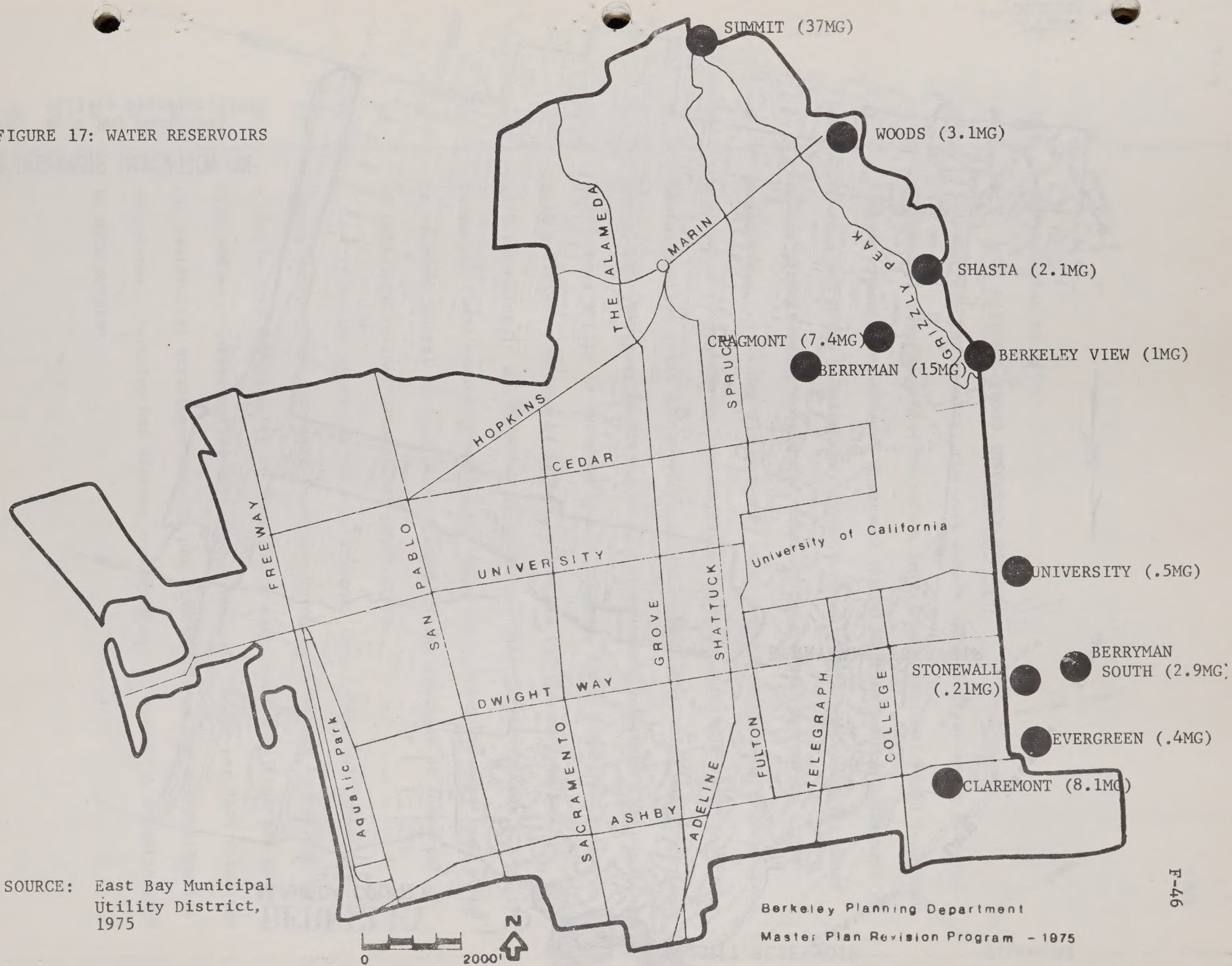
Berkeley Planning Department
Master Plan Revision Program - 1975

1 1973 US Geological Survey study.

2 Flooding in Berkeley would come about as a result of: 1) overflow . .
3 from the bay; 2) swelling of creeks; 3) overriding of curbs in the hill
4 areas; and 4) dam failure. During a very heavy storm, water could con-
5 ceivably overflow from the bay depending on whether there is a high or
6 low tide. In addition, during a major earthquake, seismically induced
7 sea waves or tsunamis would flood the waterfront area plus small parts of
8 the industrial district in the West Berkeley area. As stated previously,
9 the creeks in Berkeley serve as a major component of the storm drainage
10 system. In the event of heavy rains, the creeks could swell and over-
11 flow producing some damage, particularly Harwood and Temescal creeks near
12 Claremont Avenue. The overriding of curbs in the hills area will be
13 prevalent where the curbs are marginally defined or nonexistent, re-
14 sulting in the flooding of some basements. Finally, flooding from dam
15 failures could be costly, both in terms of lives and property. Dams and
16 reservoirs could collapse due to strong groundshaking or landslides, re-
17 leasing a tremendous volume of water to inundate downstream development
18 (See Figure 17 for the location of Berkeley's water reservoirs). The
19 East Bay Municipal Utilities District, as required by the State, has pre-
20 prepared a dam failure inundation map for its reservoirs. So far, inundation
21 maps for Summit and Berryman Reservoirs have been received (See Figure 18).
22 Copies of other maps will be made public as soon as they are approved by
23 the State Office of Emergency Services.

24 With the exception of dam failure which could cause considerable damage .
25 to life and property, most flooding in Berkeley would occur only as "sheet
26 flow" with depths of less than several feet of water. The most
27 serious dangers would therefore be potential damage to property, rather
28

FIGURE 17: WATER RESERVOIRS



SOURCE: East Bay Municipal
Utility District,
1975

Berkeley Planning Department
Master Plan Revision Program - 1975

BERKELEY ALAMEDA COUNTY CALIFORNIA

SCALE IN FEET

SUMMIT RESERVOIR

Figure 18

BERRYMAN RESERVOIR

CHARLES

LEE

TILDEN

PARK

GOLF LINKS

UNIVERSITY OF CALIFORNIA

CALIFORNIA SCHOOL FOR DEAF

CALIFORNIA SCHOOL FOR BLIND

HOTEL CLAREMONT

BERKELEY OAKLAND

WATER RESERVOIR INUNDATION MAP

SOURCE: East Bay Municipal
Utility District, 1975

STREET NUMBERS

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ENGINEERING DIVISION
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1 than a threat to life.

2 B. THE NATIONAL FLOOD INSURANCE PROGRAM

3 Across the country, the most common natural disaster is flooding.
4 The Federal Government has therefore initiated a National Flood Insurance
5 Program through the Federal Insurance Administration of the Department of
6 Housing and Urban Development. This program offers comprehensive flood
7 damage protection at subsidized rates to owners of property in flood-
8 prone areas. In order for property owners to participate in this program,
9 a city has to qualify by submitting an application to the Flood Insurance
10 Administration (FIA) and adopting at least simple building permit require-
11 ments such as proper anchoring of buildings to prevent them from floating
12 away. Once a City is accepted in the program, local insurance agents will
13 sell policies. Failure by a City to qualify for the program by July 1,
14 1975 (assuming it was notified at least one year earlier by the FIA of its
15 potential flood hazards), will make individuals and businesses ineligible
16 to receive federal assistance for financing the purchase or construction
17 of buildings in identified flood-prone areas.

18 If a city qualifies for the program, then individual property
19 owners can purchase low-cost insurance to cover losses up to \$35,000 on
20 a single unit dwelling, up to \$100,000 on multi-unit dwellings and up to
21 \$100,000 on non-residential buildings. The cost is 25¢ per \$100 valuation
22 for residential structures and 40¢ per \$100 valuation for non-residential
23 structures. Berkeley has already qualified and is currently a participant
24 in this program.

IV. COMPOSITE MAP OF NATURAL HAZARDS

1 The map on the following page (Figure 19) is a composite diagram showing
2 the more readily identifiable seismic, fire and flood hazards that exist
3 in Berkeley. The Hayward Fault and the Special Studies Zone are generally
4 delineated along with areas subject to liquefaction, landslides and
5 tsunami. In addition, the Panoramic Hill fire hazard area and flood hazard
6 areas due to water reservoir inundation and the 100-year flood are also
7 outlined. There are certain parts of Berkeley which are subject to
8 various risks. For example, the waterfront area is exposed to liquefaction,
9 tsunami and 100-year flood hazards. The area near Berryman Reservoir and
10 the Rose Garden is in the Alquist-Priolo Special Studies Zone as well as
11 in landslide and reservoir inundation areas.

COMPOSITE OF NATURAL HAZARDS

BERKELEY ALAMEDA COUNTY CALIFORNIA

Figure 19

SEISMIC HAZARDS

Hayward Fault

Special Studies Zone Boundaries

Potentially Active Faults

-accurate location

-approximate location

Liquefaction

Small Landslide Areas

Major Landslide Areas

Tsunami

FIRE HAZARDS

Panoramic Hill

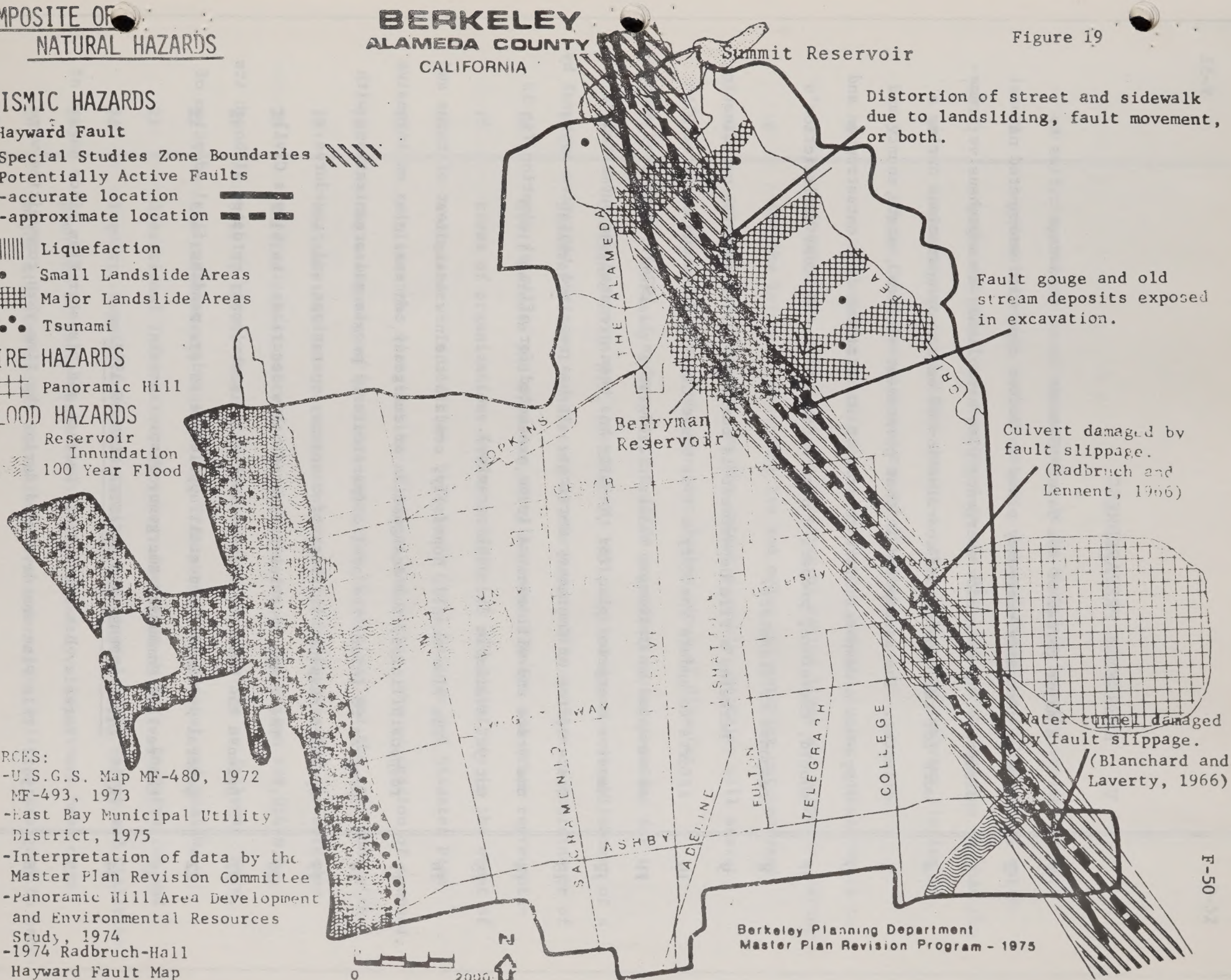
FLOOD HAZARDS

Reservoir
Inundation

100 Year Flood

SOURCES:

- U.S.G.S. Map MF-480, 1972
MF-493, 1973
- East Bay Municipal Utility
District, 1975
- Interpretation of data by the
Master Plan Revision Committee
- Panoramic Hill Area Development
and Environmental Resources
Study, 1974
- 1974 Radbruch-Hall
Hayward Fault Map



Berkeley Planning Department
Master Plan Revision Program - 1975

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V. EMERGENCY PREPAREDNESS

1 A major thrust of the Safety Element is to encourage cities to
2 develop community emergency plans to better cope with unexpected natural
3 disasters. A community emergency plan establishes a comprehensive frame-
4 work for the conduct and coordination of emergency operations during a
5 disaster. The assumption is that government--federal, state, county and
6 city--has a responsibility to protect its citizens from catastrophes and
7 should, therefore, prepare a plan which outlines a local jurisdiction's
8 response to disasters.

9 Berkeley's Fire Department is currently continuing its coordinating
10 efforts to update the City's 1961 basic Civil Defense and Disaster Plan
11 as mandated by Ordinance #4721-N.S. (November 7, 1974). A revised compre-
12 hensive emergency plan for the City has been prepared and submitted to the
13 State Office of Emergency Services. It has received tentative approval by
14 the State and will eventually be presented for official adoption (it is
15 not yet available for public review).

16 The Plan should, hopefully, contain the new assignment of tasks and
17 responsibilities, the designation of emergency centers, plus an intensive
18 program to inform the public (particularly people and organizations with
19 specific responsibilities) of emergency operations and procedures.

20 The rough overview presented below describes the City's Civil
21 Defense and Disaster Plan of 1961. It is obviously outdated although its
22 general provisions are still applicable today, pending final adoption of
23 the revised Community Emergency Plan.

24 A. CIVIL DEFENSE AND DISASTER PLAN OF 1961

25 Berkeley has had a Civil Defense and Disaster Plan since August of
26 1961. This Plan was developed during the time when communities were
27

1 fearful of a nuclear attack. It is therefore heavily oriented toward
2 potential enemy nuclear attack. Natural disasters such as fire, earth-
3 quake and flood are mentioned in the Plan and the implication is that the
4 operational steps taken during a natural disaster are very similar to
5 those taken during a war-caused disaster.

6 According to this Plan, the City's mandate during a disaster is to
7 minimize the effects of the disaster by saving lives and property, caring
8 for the injured, preserving law and order and carrying out recovery
9 operations. Moreover, to the extent possible, Berkeley will assist
10 neighboring cities and counties during times of disaster.

11 Berkeley's original Disaster Organization, as provided for in
12 Ordinance #3216-N.S. (October 2, 1951, called for the establishment of a
13 Disaster Council consisting of the Mayor, City Manager, a coordinator of
14 Civil Defense and Disaster, City department heads and other representa-
15 tives of organizations having an official responsibility in the event of
16 a disaster. In addition, Berkeley's Civil Defense and Disaster Plan
17 outlines the distribution of powers and duties, the succession of command,
18 the assignment of functions among the 14 services and the relations with
19 the American Red Cross, the University of California and the Berkeley
20 Unified School District (as provided for in Resolution #39,014-N.S.,
21 July 3, 1962). The 14 services mentioned above are as follows: Fire,
22 Law Enforcement, Engineering, Transportation, Medical and Health,
23 Operational Information, Manpower, Emergency Welfare, Registration and
24 Inquiry, Supply, Communications, Rescue, Radiological Safety and Utilities.
25 Each one of these basic services is headed by a department head or a
26 major division chief. Detailed tasks and responsibilities assigned to each
27

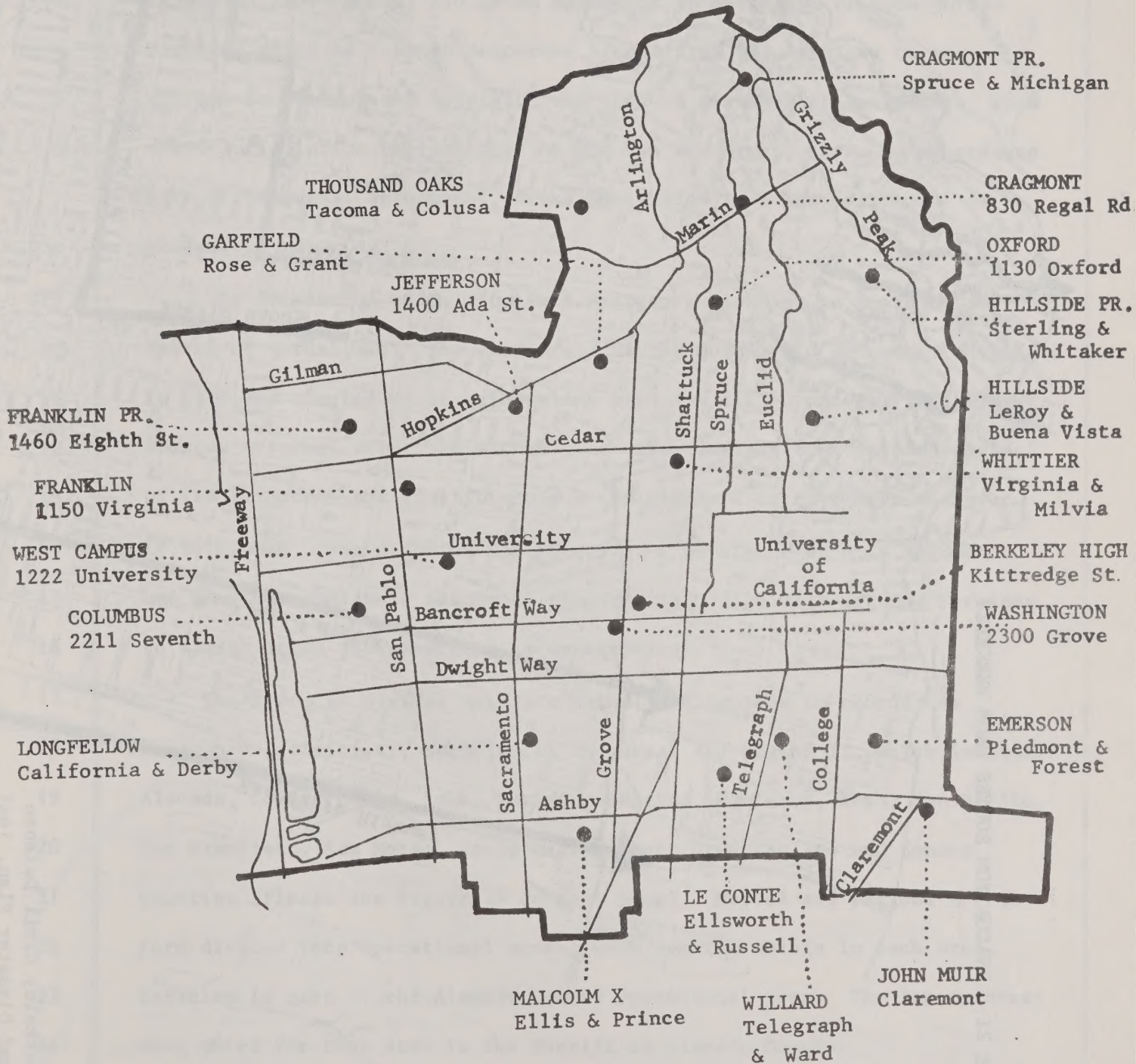
1 service are contained in individual annexes (i.e., emergency operations
2 plans). There is also a University of California annex and a Berkeley
3 Public School annex.

4 Communications during a disaster will be available through the
5 Police Department radio network in the Hall of Justice on McKinley Street,
6 the Fire Department radio network in Fire Station #2 on Henry Street, the
7 Public Works Department radio network located at the City Corporation Yard,
8 and amateur radio stations. According to the Plan, the primary control
9 center is located in the Police Control Center on the 2nd Floor of the
10 Hall of Justice with alternate control centers at dispersed locations
11 throughout the City.

12 During a major disaster, the designation of medical care centers
13 where people can receive treatment is quite essential. The Plan proposes
14 using school buildings as care centers. Figure 20 on the following page
15 shows a map of mass care, medical centers and related field stations with
16 approximate addresses.

17 In terms of evacuation routes from Berkeley, the 1961 plan designates
18 streets to be used as exit routes during a disaster (See Figure 21). If
19 one is on the Eastshore Freeway or San Pablo Avenue, one should travel
20 north and continue as directed by the State Highway Patrol; if on Arlington
21 Avenue, travel north to the end of Arlington and then to San Pablo Dam
22 Road as directed; if on Spruce, Euclid or Shasta Road, cross into Tilden
23 Park and continue east as directed; if on Tunnel Road, travel east to
24 Orinda crossroads and continue as directed by the State Highway Patrol.

FIGURE 20: MEDICAL STATIONS AND MASS CARE CENTERS



SOURCE: Berkeley Civil Defense
and Disaster Plan, 1961

FIGURE 21: EVACUATION ROUTES FROM BERKELEY



SOURCE: Berkeley Civil Defense and Disaster Plan, 1961

STREET NUMBERS.
Numbers in circles refer to maps of the city.
Numbers in squares refer to maps of the county.

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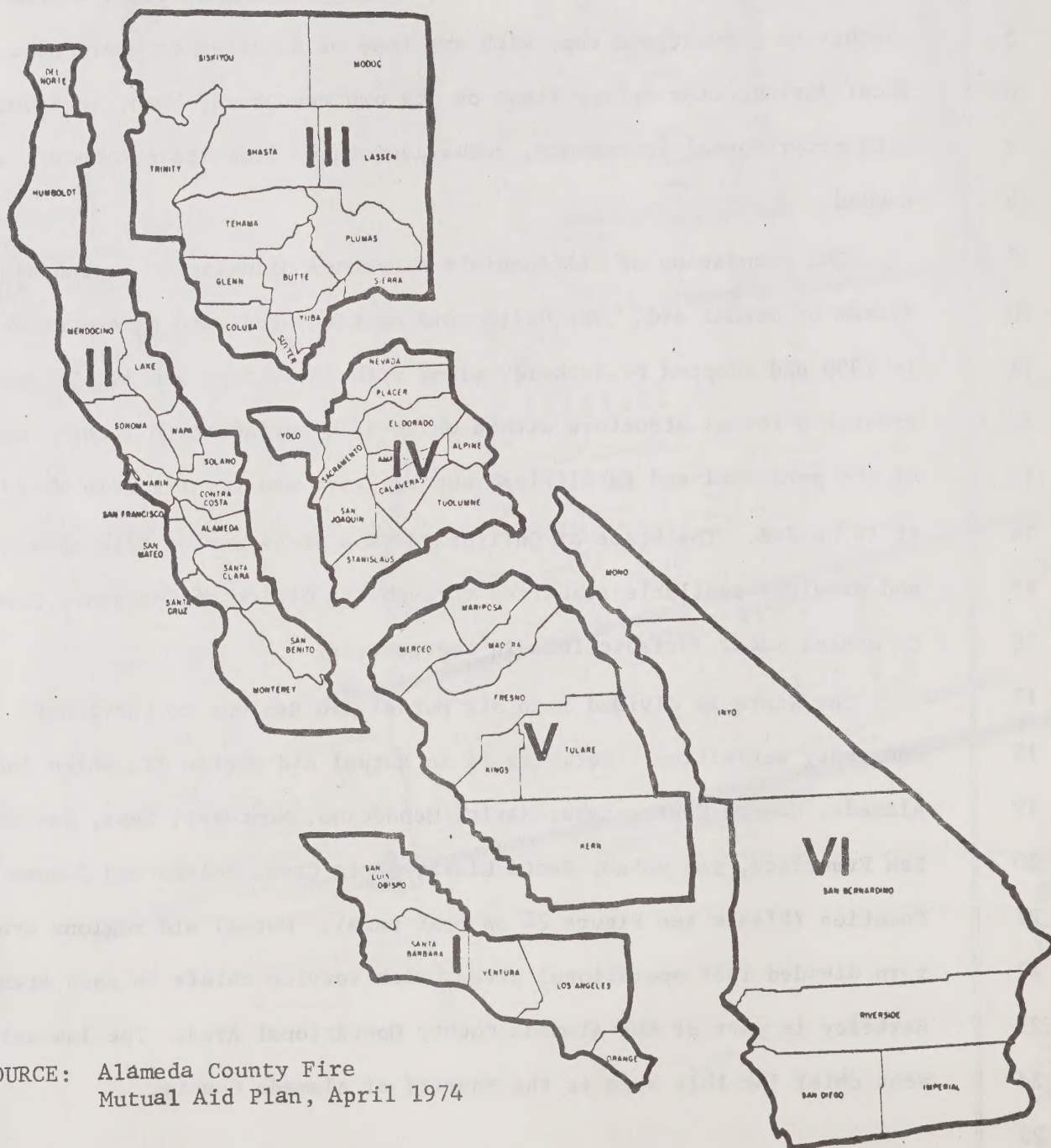
B. MUTUAL AID AGREEMENT

1 Since no community has the resources to effectively handle all poten-
2 tial emergencies, a major component of emergency planning and operations
3 is mutual aid. Mutual aid is an agreement in which two or more juris-
4 dictions agree to furnish resources, facilities and services to one
5 another to prevent and cope with any thpe of disaster or emergency. Each
6 local jurisdiction relies first on its own resources, then, in accordance
7 with prior formal agreements, seeks assistance from its neighbors as
8 needed.

9 The foundation of California's emergency planning is a statewide
10 system of mutual aid. The California Master Mutual Aid Agreement developed
11 in 1950 and adopted by Berkeley along with 391 cities and all 58 counties,
12 creates a formal structure within which each jurisdiction retains control
13 of its personnel and facilities, but can give and receive help whenever
14 it is needed. The State of California is a co-signer of this agreement
15 and provides available resources through its Office of Emergency Services
16 to assist local jurisdictions in emergencies.

17 The State is divided into six Mutual Aid Regions to coordinate
18 emergency activities. Berkeley is in Mutual Aid Region II, which includes
19 Alameda, Contra Costa, Lake, Marin, Mendocino, Monterey, Napa, San Benito,
20 San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma
21 Counties (Please see Figure 22 on next page). Mutual aid regions are in
22 turn divided into operational areas, with service chiefs in each area.
23 Berkeley is part of the Alameda County Operational Area. The law enforce-
24 ment chief for this area is the Sheriff of Alameda County.

FIGURE 22: MUTUAL AID REGIONS OF CALIFORNIA



SOURCE: Alameda County Fire
Mutual Aid Plan, April 1974

SECTION THREE: GOAL AND POLICY RECOMMENDATIONS

Berkeley is highly susceptible to natural hazards because of location, topography, soil conditions and other factors. Earthquakes and related seismic activity, fires and floods could create minor to catastrophic disruption of urban life in the city.

Berkeley is definitely earthquake country, with the hills and UC campus straddling the Hayward Fault. A 7+ magnitude earthquake along this fault will probably produce strong ground shaking and a ground displacement of several feet. Other seismic-related activities such as landslides, liquefaction, structural damage and flooding due to seismically-induced waves could also occur during a major earthquake. Even without an earthquake, parts of the Berkeley hills pose a fire hazard problem because of the nearby densely wooded wildland, steep topography and narrow, winding roads. Flooding is a potential hazard in the Waterfront and West Berkeley areas and above Claremont Avenue in the southeast portion of the city.

GOAL

THE OVERALL GOAL OF THE SAFETY/SEISMIC SAFETY ELEMENT IS TO REDUCE TO A MINIMUM RISKS ASSOCIATED WITH NATURAL HAZARDS, TO GUIDE ACTIVITIES DURING AN EMERGENCY AND TO MINIMIZE PROBLEMS RELATED TO THE REBUILDING OF THE CITY AFTER A MAJOR DISASTER.

The policies below present a framework for achieving this goal.

● POLICY 5.00 -- ACCEPTABLE EXPOSURE TO RISK

ESTABLISH CRITERIA FOR ACCEPTABLE EXPOSURE TO SEISMIC, FIRE AND FLOOD RISK FOR LAND USES AND STRUCTURE TYPES BASED ON THE NATURE OF USE, THE IMPORTANCE OF THE USE TO THE TOTAL COMMUNITY AND THE DENSITY OF OCCUPANCY.

SECTION THREE: GOAL AND POLICY RECOMMENDATIONS

18 • POLICY 5.01 -- SPECIAL REGULATIONS

19
20 ENACT SPECIAL DEVELOPMENT REGULATIONS FOR KNOWN SEISMIC-RELATED
21 HAZARD AREAS AND FOR CRITICAL, ESSENTIAL OR HIGH-OCCUPANCY STRUCTURES
22 THROUGHOUT THE CITY.

23 In 1972, the State legislature adopted the Alquist-Priolo Geologic
24 Hazard Zones Act which provides for the identification and mapping of
25 all known active faults in California by the State Geologist. In addition,
26
27

1 a Special Studies Zone is delineated which generally encompasses the area
2 contained within 650 feet from either side of identified active faults.
3 Some of the restrictions imposed on development in this zone are as
4 follows:

- 5 • The area within 50 feet of an active fault shall
6 be assumed to be underlain by active branches of
7 the fault unless proven otherwise by a registered
8 geologist.
- 9 • Application for all proposed developments within
10 the Special Studies Zone shall be accompanied by
11 geologic reports prepared by registered geologists.

12 The city should develop similar regulations for areas of known
13 seismic-related hazards outside of the Special Studies Zone. For
14 example, more restrictive requirements should be imposed which would
15 not allow future construction of Group 1 through Group 3 structures
16 within the Special Studies Zones and areas of known hazards, unless
17 appropriate structural design reinforcement is provided. Compensating
18 structural designs should be implemented for those structures whose
19 failure could be catastrophic to the community, which are essential
20 during emergencies or which involve high occupancy. Berkeley could
21 acquire lands subject to severe seismic and geologic hazards for open
22 space or low intensity park and recreational activities.

LEVEL OF ACCEPT- ABLE EXPOSURE TO RISK	EXPLANATIONS	KINDS OF LAND USES & STRUCTURES
Group 1. Lowest level of accept- able exposure to risk	Failure of a simple structure may affect substantial populations. Structures whose continued functioning is critical to the community welfare or whose failure might be catastrophic. These structures should experience no structural/mechanical failure or damage to interior equipment. These structures must be fully operational immediately following a major earthquake.	Critical structures such as nuclear reactors, large dams, plants manufacturing or storing explosives or toxic materials
Group 2. Very low level of accept- able exposure to risk	Failure of a single structure may affect substantial populations. Structures whose use is critically needed after a disaster. These structures must not experience structural/mechanical failure, with little or no damage to interior furnishings and equipment. They must be fully operational following a major earthquake.	Essential structures such as hospital, fire stations, important utility centers, critical transportation elements such as bridges and overpasses, fire, police, and emergency communication facilities
Group 3. Low Level of acceptable exposure to risk	Failure of single structure would affect primarily the occupants. Structures of high occupancy or whose use after a disaster would be particularly convenient though not critical. No structural collapse should occur or damage that cannot be repaired quickly.	High occupancy structures such as schools, churches, civic buildings, theaters, large hotels, jails, dormitories, high-rise apartment or office buildings
Group 4. Ordinary level of accept- able exposure to risk	Failure of a single structure would affect primarily the occupants. No structural collapse should occur; damage may occur to mechanical systems and contents of building.	Relatively low occupancy structures such as most industrial or commercial buildings, small hotels and apartment buildings
Group 5. More than ordinary level of acceptable exposure to risk	Failure of a single structure would affect primarily the occupants. A vast majority of Berkeley's structures are in this group. No structural collapse should occur. Damage may occur to mechanical systems and contents of building.	Single family residences, warehouses
Group 6. Highest level of acceptable exposure to risk		Open Space only

SOURCE: "Scale of Acceptable Risks," Meeting the Earthquake Challenge, California Joint Committee on Seismic Safety (January 1974)

• POLICY 5.02 -- HAZARD ABATEMENT

1 INITIATE AN ORDERLY ABATEMENT OF SEISMIC, FIRE AND FLOOD-RELATED
2 HAZARDS. PRIORITY FOR ABATEMENT ACTION SHOULD BE BASED ON THE SEVERITY
3 OF THE RISK, THE DENSITY OF OCCUPANCY AND THE IMPORTANCE OF THE STRUCTURE
4 TO THE COMMUNITY AS A WHOLE. IN ALL CASES, ADEQUATE MEASURES SHOULD BE
5 PROVIDED TO PREVENT UNDUE ECONOMIC HARDSHIP OR RELOCATION PROBLEMS TO THE
6 AFFECTED PEOPLE..

7 In a city like Berkeley which is almost totally developed, existing
8 hazardous structures represent perhaps the greatest threat to the lives
9 and safety of the community. Immediate action should therefore be taken
10 to identify these structures and begin to evaluate ways to correct the
11 hazards. The city should establish a program to have critical, essential
12 and high-occupancy structures highly susceptible to damage either rein-
13 forced, relocated or demolished.

14 • POLICY 5.03 -- FIRE IN THE HILL AREAS

15 FIRE HAZARDS IN EXISTING AND FUTURE DEVELOPMENT OF THE HILL AREAS,
16 ESPECIALLY NEAR THE DENSELY WOODED WILDLAND, SHALL BE MINIMIZED THROUGH
17 CAREFUL SITE DESIGN AND VEGETATION CONTROL.

18 A special fire hazard that exists in the Berkeley hills area is the
19 potential for a major forest fire after an earthquake or after a very
20 dry and windy summer. One way to reduce the risk is through fuel
21 control that eliminates highly combustible vegetation, thereby providing
22 a fuel break to prevent conflagration. A careful vegetation management
23 program should guide the replanting of cleared areas with mature, low
24 growing plants that are fire-resistant and produce very little heat.
25 Good site design and vegetation control are essential fire prevention
26 measures for the hill areas.
27

• POLICY 5.04 -- PUBLIC CODES

CONTINUALLY UPDATE THE PUBLIC CODES THAT REGULATE THE DESIGN AND CONSTRUCTION OF NEW STRUCTURES TO INCORPORATE THE MOST RECENT KNOWLEDGE AND HIGHEST STANDARDS OF EARTHQUAKE, FIRE AND FLOOD DESIGN TECHNIQUES.

New knowledge on improved design techniques and the impact of natural hazards on land uses should be incorporated in appropriate codes.

• POLICY 5.05 -- EMERGENCY PLANS

MAINTAIN AND UPDATE PERIODICALLY A COMPREHENSIVE COMMUNITY EMERGENCY OPERATIONS PLAN FOR BERKELEY.

The City of Berkeley Disaster Council should be activated immediately to conduct periodic revisions of the Plan and acquaint the total community with the procedures and operations suggested by the Plan. Periodic test exercises of the emergency plan network--communications, medicine, personnel--should be conducted.

• POLICY 5.06 -- MUTUAL AID

EXPAND AND MAKE MORE EFFECTIVE EXISTING MUTUAL AID PACTS BETWEEN BERKELEY AND NEARBY JURISDICTIONS TO INCLUDE A WIDER VARIETY OF PUBLIC SERVICES BEYOND FIRE AND POLICE.

In California 392 cities, 58 counties and the State have all signed the California Disaster and Civil Defense Master Mutual Aid Agreement which enables a city, following a major disaster, to seek assistance from other jurisdictions when the city's own resources have been depleted or incapacitated. Some fire and police departments have utilized mutual aid successfully, but it is essential that Berkeley and nearby participating cities expand the coverage of such pacts to include public works, building inspection and other personnel with critical post-disaster skills.

• POLICY 5.07 -- COMMUNITY AWARENESS

1 INITIATE A MAJOR COMMUNITY AWARENESS PROGRAM ON SEISMIC, FIRE,
2 FLOOD AND RELATED HAZARD SAFETY. ACQUAINT ALL RESIDENTS WITH THE
3 CITY'S COMMUNITY EMERGENCY OPERATIONS PLAN.

4 Risk could be reduced in local neighborhoods if the residents are
5 made more aware of public safety measures that can be taken at minimal
6 cost to them. For example, the city is already participating in the
7 National Flood Insurance Program and property owners whose structures
8 are located in flood-prone areas should be informed and encouraged to
9 participate in the program. Areas that pose known potential hazards
10 should be delineated and made available to the public without causing
11 alarm. In particular, current property owners, businesses, prospective
12 property owners and real estate salespersons should have all natural
13 hazard information relating to specific private developments of interest
14 to them. In addition, Berkeley residents should be made aware of
15 emergency services, operations and procedures (contained in the city's
16 community emergency operations plan) that will be in effect during a
17 major disaster.

18 #####
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GLOSSARY*

1 • ACTIVE FAULT

2 A fault which has moved in recent geologic time and which is likely
3 to move again in the relatively near future. For planning pur-
4 poses, a fault which has moved in the last 10,000 years is con-
5 sidered active.

6 • ALLUVIAL DEPOSITS

7 Irregularly stratified, poorly consolidated deposits of mud, silt,
8 sand and gravel found in stream and water beds and on adjoining
9 flood plains. The surface of these deposits generally are relatively
10 flat or gently sloping. These deposits may be water bearing, are
11 commonly porous and permeable and may compact slightly upon
12 loading.

13 • ALLUVIAL FAN DEPOSITS

14 Irregularly stratified, unconsolidated to poorly consolidated,
15 fan-shaped sediments of mud, silt, clay and gravel deposited by
16 streams and mudflows. Fan deposits are generally easy to excavate
17 and not very resistant to erosion. Natural slopes are normally
18 stable, although stream undercutting can produce streambank
19 failure and some compaction or local subsidence of the fan surface
20 may take place.

21 -----
22 * SOURCES FOR GLOSSARY TERMS:

- 23 • Civil Defense and Disaster Plan, City of Berkeley, 1961.
 - 24 • Seismic Hazards and Land Use Planning, USGS, 1974
 - 25 • Tri-City Seismic Safety Study, Cities of El Cerrito, Richmond and
26 San Pablo, 1973
- 27

GLOSSARY● ALLUVIAL TERRACE DEPOSITS

Irregularly stratified alluvial deposits of clay-sized materials, silt, sand and gravel that underlie horizontal to gently inclined flat surfaces that are adjacent to but above present streambeds.

● AMPLIFICATION

The increase in earthquake ground motion that may occur to the principal components of seismic waves as they enter and pass through different earth materials.

● BEDROCK

Solid rock underlying surface materials (sand, clay, soil, etc.)

● COLLUVIAL DEPOSITS

Poorly stratified and poorly consolidated deposits composed of fresh and weathered rock fragments, soil, or irregular mixtures of these materials that accumulate near the foot of a slope by slow downslope movement of surficial material. Colluvial deposits are easily eroded. They may be water bearing and will probably compact under loading. Grading (resulting in steeper slopes) may accelerate the rate of downslope movement and produce landslides.

● DIFFERENTIAL SETTLEMENT

Process whereby the loss of strength or water through liquefaction leads to uneven ground settlement.

● EMERGENCY OPERATIONS CENTER

A facility with some degree of fallout protection and the necessary staff and communication capability from which essentially all emergency functions are directed and controlled by the principal officials of government.

- FAULT

A plane or surface in earth materials along which failure has occurred and materials on opposite sides have moved relative to one another in response to the accumulation of stress in the rocks.

- FAULT CREEP

Slow and imperceptible movement along a fault, unaccompanied by an earthquake.

- GROUND CRACKING

A condition where the ground fails to hold together as in mudslide, liquefaction and landslide.

- GROUND LURCHING

Undulating waves in soft saturated ground that may or may not remain after the earthquake.

- GROUND RESPONSE

The reaction of the ground to earthquake shaking.

- HAYWARD FAULT

A large and active fault of the San Andreas Fault System. It has been the center of many earthquakes, including the 1868 earthquake which was one of the largest ever to hit Northern California.

- HAZARDOUS BUILDING

Building considered unsafe owing to poor design, poor construction techniques or materials, defects in foundation conditions, lack of maintenance, or damage from any one of several possible causes.

- INACTIVE FAULT

A fault which has not moved in recent geologic time (about 10,000 years) and which is not expected to move again in the relatively near future. Sometimes, inactive faults are so labeled due to lack of knowledge rather than actual state.

● INTENSITY

1 A subjective measure of earthquake size at a particular place as
2 determined by its effects on persons, structures and earth materials.
3 The principal scale used in the United States today is the modified
4 Mercalli (1956 version). Intensity is a measure of effects whereas
5 magnitude is a measure of energy released.

6 ● INUNDATION

7 Flooding caused by water topping a dam or water released by dam
8 reservoir failure or other breaks.

9 ● LANDSLIDE

10 The rapid downward movement of loose masses of rock, earth or artificial
11 fill on a slope.

12 ● LIQUEFACTION

13 A process whereby water saturated and cohesionless soil loses its
14 cohesiveness when subjected to intense ground shaking. The soil loses
15 all strength and acts like quicksand.

16 ● LOCAL EMERGENCY

17 Shall mean the existence of conditions within the territorial limits
18 of a local agency, in the absence of a duly proclaimed State of
19 Emergency, which conditions are a result of an emergency created by
20 great public calamity such as air pollution, extraordinary fire,
21 flood, storm earthquake, civil disturbances or other disaster which
22 is or is likely to be beyond the control of the services, personnel,
23 equipment and facilities of that agency and require the combined
24 forces of other local agencies to combat. (California Emergency
25 Services Act, Chapter 7 of Division 1 of Title 2 of the Government
26 Code - 1970 Statutes)
27

• MAGNITUDE

A measure of the energy released in an earthquake. The rating of a given earthquake is defined on a logarithmic scale where each upward step of one magnitude unit is equivalent to a 32 fold increase in energy release. The Richter Scale is used to measure earthquake magnitudes.

• MUTUAL AID

An agreement in which two or more parties agree to furnish resources and facilities and to render services to each and every other party of the agreement to prevent and combat any type of disaster or emergency.

• MUTUAL AID REGION

A subdivision of the state's fire and rescue services organization, established to facilitate the coordination of mutual aid and other emergency operations within a geographical area of the state, consisting of two or more county operational areas.

• OPERATIONAL AREA

An intermediate level of the state fire and rescue services organization, normally consisting of a county and all fire and rescue organizations within the county.

• PREDOMINANT BUILDING VIBRATION PERIOD

A number representing the time between seismic wave peaks to which a building on the ground is most vulnerable.

• SEDIMENT

Solid material settled from suspension in a liquid.

- SEICHE

Earthquake-induced waves within enclosed or restricted bodies of water (such as lakes and reservoirs) which act like the sloshing of water in a bowl during ground shaking.

- SEISMIC HAZARDS

Hazards related to seismic or earthquake activity.

- STATE OF EMERGENCY

Means the duly proclaimed existence of conditions of extreme peril to the safety of persons and property within the state caused by such conditions as air pollution, fire, flood, storm, civil disturbances or earthquake, or other conditions, except as a result of war-caused emergencies, which conditions by reason of their magnitude are, or are likely to be beyond the control of the services, personnel, equipment and facilities of any single county, city and county, or city and would require the combined forces of a mutual aid region or regions to combat. "State of Emergency" does not include, nor does any provision of this plan apply to any condition resulting from a labor controversy. (California Emergency Services Act, Chapter 7 of Division 1 of Title 2 of the Government Code - 1970 Statutes)

- SUBSIDENCE

Shrinking of a large area of land.

- SURFACE RUPTURE

Break in the ground surface resulting from fault movement.

- TSUNAMI

A sea wave produced by large areal displacements of the ocean bottom, often the result of earthquakes or volcanic activity. Also known as seismic sea waves.

APPENDIX A

● SEISMIC SAFETY ELEMENT MANDATE

Government Code Section 65302(f) requires a Seismic Safety Element of all city and county general plans, as follows:

"A Seismic Safety Element consisting of an identification and appraisal of seismic hazards such as susceptibility to surface ruptures from faulting, to ground shaking, to ground failures or to the effects of seismically induced waves such as tsunami and seiches.

The Seismic Safety Element shall also include an appraisal of mudslides, landslides and slope stability as necessary geologic hazards that must be considered simultaneously with other hazards such as possible surface ruptures from faulting, ground shaking, ground failure and seismically induced waves."

● SAFETY ELEMENT MANDATE

Government Code Section 65302.1 requires a Safety Element of all city and county general plans, as follows:

"A Safety Element for the protection of the community from fires and geologic hazards including features necessary for such protection as evacuation routes, peak load water supply requirements, minimum road widths, clearances around structures and geologic hazard mapping in areas of known geologic hazard."

APPENDIX B

TO: Oscar A. Sung

February 1975

FROM: Steve Yamada

SUBJECT: Earthquake Special Studies Zone

The following data gives approximations as to the number of residential structures (and housing units), commercial shops, and institutional buildings within the Earthquake Special Studies Zone. Information was collected from U.S. Geological Survey's Special Studies Zone Map and City of Berkeley land use maps.

	CLAREMONT ELMWOOD	SOUTH CAMPUS	NORTHGATE	HILLSIDE	HILLS THOUSAND OAKS	TOTAL
Residential Structures	407	272	312	600	1491	3082
Housing Unit	459	432	1186	782	1494	4363
	plus 2 rooming houses	plus 86 fraterni- ties, sororities, rooming houses; plus, U.C. married student housing, International House, & U.C. Unit I Dorm	plus 25 rooming houses	plus 1 room- ing house		
Commercial Shops	14	0	33	0	5	52
Institutional Buildings	7 (Claremont Hotel, Calif. School for Deaf, Church, John Muir Elemen- tary (468 pupils) (Child Care Cen- ters within John Muir School-Clare- mont Day Nurseries, John Muir After School Program); Stonewall Reservoir, Evergreen Reservoir, Family Day Care Home	3 (Cowell Hospital Church, Child Care Center, Smyth-Fern- wald) Nearby - Church, U.C. Art Museum, YWCA, Hotel Durant	4 (3 Church- Theology Schools, Child Care Center, Scenic Pre- School) Nearby Kilimanjaro School	7 (Park, Hillside Elementary School (312 pupils), 2 Churches, Family Day Care Home, Tem- ple Bethel Nursery, Berryman Reservoir)	4 (Oxford Elementary School (301 pupils) Cragmont Elementary School (423 pupils), Family Day Care Home	25

Senate Bill No. 520

CHAPTER 1354

An act to amend Sections 660, 661, and 662 of, and to add Chapter 7.5 (commencing with Section 2621) to Division 2 of, the Public Resources Code, relating to earthquake protection, and making an appropriation therefor.

[Approved by Governor December 22, 1972. Filed with Secretary of State December 22, 1972.]

LEGISLATIVE COUNSEL'S DIGEST

SB 520, Alquist. Earthquake protection.

Increases the membership of the State Mining and Geology Board from 9 to 11 persons and declares that persons with specified occupations should be selected for membership on the board. Designates the board as a policy and appeals board for the purposes of provisions re earthquake hazard zones.

Requires the State Geologist to delineate, by December 31, 1973, special studies zones encompassing certain areas of earthquake hazard. Requires State Geologist to compile maps delineating the special studies zones and to submit such maps to affected cities, counties, and state agencies for review and comment. Requires the State Geologist to continually review new geologic and seismic data and revise special studies zones and submit such revisions to affected cities, counties, and state agencies for review and comment. Appropriates \$100,000 for such purposes. Requires affected cities, counties, and state agencies to submit their comments to board.

Requires cities and counties to exercise specified approval authority with respect to real estate developments or structures for human occupancy within such delineated zones. Requires applicants for a building permit within such zone to be charged a fee according to a fee schedule established by the board. Limits maximum amount of such fee. Provides for retention of $\frac{1}{2}$ of the proceeds of any such fee by the city or county having jurisdiction and transfer of $\frac{1}{2}$ to the state.

The people of the State of California do enact as follows:

SECTION 1. Section 660 of the Public Resources Code is amended to read:

660. There is in the department a State Mining and Geology Board, consisting of 11 members appointed by the Governor, subject to confirmation by the Senate, for terms of four years and until their successors are appointed and qualified. The State Mining and Geology Board shall also serve as a policy and appeals board for the purposes of Chapter 7.5 (commencing with Section 2621) of Division 2.

SEC. 2. Section 661 of the Public Resources Code is amended to read:

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661. Members of the board shall be selected from citizens of this state associated with or having broad knowledge of the mineral industries of this state, of its geologic resources, or of related technical and scientific fields, to the end that the functions of the board as specified in Section 667 are conducted in the best interests of the state. Among the 11 members, two should be mining geologists, mining engineers, or mineral economists, one should be a structural engineer, one should be a geophysicist, one should be an urban or regional planner, one should be a soils engineer, two should be geologists, one should be a representative of county government, and at least two shall be members of the public having an interest in and knowledge of the environment.

SEC. 3. Section 662 of the Public Resources Code is amended to read:

662. The terms of the members of the board in office when this article takes effect in 1965 shall expire as follows: one member January 15, 1966; two members January 15, 1967; and two members January 15, 1968. The terms shall expire in the same relative order as to each member as the term for which he holds office before this article takes effect. The terms of the two additional members first appointed pursuant to the amendment of this section at the 1968 Regular Session of the Legislature shall commence on January 15, 1969. The terms of the two additional members first appointed pursuant to the amendment of Section 660 at the 1970 Regular Session of the Legislature shall commence on January 15, 1971, but the term of one of such additional members, who shall be designated by the Governor, shall expire on January 15, 1974. The terms of the two additional members first appointed pursuant to the amendment of Section 660 at the 1972 Regular Session of the Legislature shall commence on January 15, 1973, but the term of one of such additional members, who shall be designated by the Governor, shall expire on January 15, 1976.

SEC. 4. Chapter 7.5 (commencing with Section 2621) is added to Division 2 of the Public Resources Code, to read:

CHAPTER 7.5. HAZARD ZONES

2621. This chapter shall be known and may be cited as the Alquist-Priolo Geologic Hazard Zones Act.

2621.5. It is the purpose of this chapter to provide for the adoption and administration of zoning laws, ordinances, rules, and regulations by cities and counties, as well as to implement such general plan as may be in effect in any city or county. The Legislature declares that the provisions of this chapter are intended to provide policies and criteria to assist cities, counties, and state agencies in the exercise of their responsibility to provide for the public safety in hazardous fault zones.

2622. In order to assist cities and counties in their planning, zoning,

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and building-regulation functions, the State Geologist shall delineate, by December 31, 1973, appropriately wide special studies zones to encompass all potentially and recently active traces of the San Andreas, Calaveras, Hayward, and San Jacinto Faults, and such other faults, or segments thereof, as he deems sufficiently active and well-defined as to constitute a potential hazard to structures from surface faulting or fault creep. Such special studies zones shall ordinarily be one-quarter mile or less in width, except in circumstances which may require the State Geologist to designate a wider zone.

Pursuant to this section, the State Geologist shall compile maps delineating the special studies zones and shall submit such maps to all affected cities, counties, and state agencies, not later than December 31, 1973, for review and comment. Concerned jurisdictions and agencies shall submit all such comments to the State Mining and Geology Board for review and consideration within 90 days. Within 90 days of such review, the State Geologist shall provide copies of the official maps to concerned state agencies and to each city or county having jurisdiction over lands lying within any such zone.

The State Geologist shall continually review new geologic and seismic data and shall revise the special studies zones or delineate additional special studies zones when warranted by new information. The State Geologist shall submit all such revisions to all affected cities, counties, and state agencies for their review and comment. Concerned jurisdictions and agencies shall submit all such comments to the State Mining and Geology Board for review and consideration within 30 days. Within 30 days of such review, the State Geologist shall provide copies of the revised official maps to concerned state agencies and to each city or county having jurisdiction over lands lying within any such zone.

2623. Within the special studies zones delineated pursuant to Section 2622, the site of every proposed new real estate development or structure for human occupancy shall be approved by the city or county having jurisdiction over such lands in accordance with policies and criteria established by the State Mining and Geology Board and the findings of the State Geologist. Such policies and criteria shall be established by the State Mining and Geology Board not later than December 31, 1973. In the development of such policies and criteria, the State Mining and Geology Board shall seek the comment and advice of affected cities, counties, and state agencies. Cities and counties shall not approve the location of such a development or structure within a delineated special studies zone if an undue hazard would be created, and approval may be withheld pending geologic and engineering studies to more adequately define the zone of hazard. If the city or county finds that no undue hazard exists, geologic and engineering studies may be waived, with approval of the State Geologist, and the location of the proposed development or structure

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may be approved.

2624. Nothing in this chapter is intended to prevent cities and counties from establishing policies and criteria which are stricter than those established by the State Mining and Geology Board, nor from imposing and collecting fees in addition to those required under this chapter.

2625. Each applicant for a building permit within a delineated special studies zone shall be charged a reasonable fee according to a fee schedule established by the State Mining and Geology Board. Such fees shall be set in an amount sufficient to meet, but not to exceed, the costs to state and local government of administering and complying with the provisions of this chapter. Such fee shall not exceed one-tenth of 1 percent of the total valuation of the proposed building construction for which the building permit is issued, as determined by the local building official. One-half of the proceeds of such fees shall be retained by the city or county having jurisdiction over the proposed development or structure for the purpose of implementing this chapter, and the remaining one-half of the proceeds shall be deposited in the General Fund.

SEC. 5. There is hereby appropriated from the General Fund in the State Treasury to the Department of Conservation the sum of one hundred thousand dollars (\$100,000) for the purposes of Section 2622 of the Public Resources Code.

F

POLICIES AND CRITERIA OF THE STATE MINING AND GEOLOGY BOARD
WITH REFERENCE TO THE ALQUIST-PRIOLO GEOLOGIC HAZARD ZONES ACT
(CHAPTER 7.5, DIVISION 2, PUBLIC RESOURCES CODE, STATE OF CALIFORNIA)

(Effective July 1, 1974)

The legislature has declared in the ALQUIST-PRIOLO GEOLOGIC HAZARD ZONES ACT that the State Geologist and the State Mining and Geology Board are charged under the Act with the responsibility of assisting the Cities, Counties and State agencies in the exercise of their responsibility to provide for the public safety in hazardous fault zones. As designated by the Act, the policies and criteria set forth hereinafter are limited to hazards resulting from surface faulting or fault creep. This limitation does not imply that other geologic hazards are not important and that such other hazards should not be considered in the total evaluation of land safety.

Implementation of the ALQUIST-PRIOLO GEOLOGIC HAZARD ZONES ACT by affected cities and counties fulfills only a portion of the requirement for these counties and cities to prepare seismic safety and safety elements of their general plans, pursuant to Section 65302 (F) and 65302.1 of the Government Code. The special study zones, together with these policies and criteria, should be incorporated into the local seismic safety and safety elements of the general plan.

The State Geologist has compiled and is in the process of compiling maps delineating special studies zones pursuant to Section 2622 of the Public Resources Code. The special studies zones designated on the maps are based on fault data of varied quality. It is expected that the maps will be revised as more complete geological information becomes available. Also, additional special studies zones may be delineated in the future. The Board has certain responsibilities regarding review and consideration of those maps prior to the time that they are finally determined. Cities, Counties and State agencies have certain opportunities under the Act to comment on the preliminary maps provided by the State Geologist and these Policies and Criteria. Certain procedures are suggested herein with regard to those responsibilities and comments.

Please note that the Act is not retroactive. Section 2623 of the Public Resources Code provides that it applies to every proposed new real estate development or structure for human occupancy.

REVIEW OF PRELIMINARY MAPS

The State Mining and Geology Board suggests that each reviewing governmental agency take the following steps in reviewing the preliminary maps submitted for their consideration:

1. All property owners within the preliminary special studies zones mapped by the State Geologist should be notified by the Cities and Counties of the inclusion of their lands within said preliminary special studies zones by publication or other means designed to inform said property owners. Such notification shall not of necessity require notification by service or by mail. This notification will permit affected property owners to present geologic evidence they might have relative to the preliminary maps.

2. Cities and Counties are encouraged to examine the preliminary maps delineating special studies zones and to make recommendations, accompanied by supporting data and discussions, to the State Mining and Geology Board for modification of said zones in accordance with the statute and within the time period specified therein.

3. For purposes of the Act, the State Mining and Geology Board regards faults which have had surface displacement within Holocene time (about the last 11,000 years) as active and hence as constituting a potential hazard. Upon submission of satisfactory geologic evidence that a fault shown within a special studies zone has not had surface displacement within Holocene time, and thus is not deemed active, the Mining and Geology Board may recommend to the State Geologist that the boundaries of the special studies zone be appropriately modified.

The definition of active fault is intended to represent minimum criteria only for all structures. Cities and Counties may wish to impose more restrictive definitions requiring a longer time period of demonstrated absence of displacements for critical structures such as high-rise buildings, hospitals, and schools.

SPECIFIC CRITERIA

The following specific and detailed criteria shall apply within special studies zones and shall be included in any planning program, ordinance, rules and regulations adopted by Cities and Counties pursuant to said GEOLOGIC HAZARD ZONES ACT:

A. No structure for human occupancy, public or private, shall be permitted to be placed across the trace of an active fault. Furthermore, the area within fifty (50) feet of an active fault shall be assumed to be underlain by active branches of that fault unless and until proven otherwise by an appropriate geologic investigation and submission of a report by a geologist registered in the State of California. This 50-foot standard is intended to represent minimum criteria only for all structures. It is the opinion of the Board that certain essential or critical structures, such as high-rise buildings, hospitals, and schools should be subject to more restrictive criteria at the discretion of cities and counties.

B. Applications for all real estate developments and structures for human occupancy within special study zones shall be accompanied by a geologic report prepared by a geologist registered in the State

of California, and directed to the problem of potential surface fault displacement through the site, unless such studies are waived pursuant to Section 2623.

C. One (1) copy of all such geologic reports shall be filed with the State Geologist by the public body having jurisdiction within thirty days of submission. The State Geologist shall place such reports on open file.

D. Requirements for geologic reports may be satisfied for a single 1 or 2 family residence if, in the judgment of technically qualified City and County personnel and with the approval of the State Geologist, sufficient information regarding the site is available from previous studies in the same area.

E. Technically qualified personnel within or retained by each City or County must evaluate the geologic reports required herein and advise the body having jurisdiction and authority.

F. Cities and Counties may establish policies and criteria which are more restrictive than those established herein. In particular, the Board believes that comprehensive geologic and engineering studies should be required for any "critical" or "essential" structure as previously defined whether or not it is located within a special studies zone.

G. In accordance with Section 2625 of the Public Resources Code each applicant for a building permit within a delineated special studies zone shall pay to the City or County administering and complying with the ALQUIST-PRIOLO GEOLOGIC HAZARD ZONES ACT a fee of one-tenth of one-percent of the total valuation of the proposed building construction for which the building permit is issued as determined by the local building official.

H. As used herein the following definitions apply:

1. A "structure for human occupancy" is one that is regularly, habitually or primarily occupied by humans; excluding therefrom freeways, roadways, bridges, railways, airport runways, and tunnels. The excluded transportation structures should be sited and designed with due consideration to the hazard of surface faulting. Mobile homes, whose body width exceed eight (8) feet, are considered as structures for human occupancy.
2. Only a geologist registered in the State of California is deemed to be technically qualified to evaluate geologic reports.
3. A "new real estate development" is defined as any new development of real property which contemplates the eventual construction of "structures for human occupancy."

2. NOISE ELEMENT

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1. INTRODUCTION OF THE NOISE ELEMENT

- Introduction of Noise
- The Element of the Noise

2. THE ELEMENT OF NOISE IN THE NOISE ELEMENT

- The Element of Noise

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- The Element of Noise

NOISE ELEMENT

- The Element of Noise
- The Element of Noise
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- The Element of Noise

III. THE ELEMENT OF NOISE IN THE NOISE ELEMENT

- The Element of Noise

- The Element of Noise
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IV. THE ELEMENT OF NOISE IN THE NOISE ELEMENT

APPENDIX

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 1, 1861. It is a very important document, as it sets out the President's policy for the new year.

2. The second part of the document is a report from the Secretary of the Treasury, dated January 1, 1861. It contains a detailed account of the financial state of the country at the beginning of the year.

3. The third part of the document is a report from the Secretary of the Interior, dated January 1, 1861. It contains a detailed account of the state of the interior of the country at the beginning of the year.

4. The fourth part of the document is a report from the Secretary of the Navy, dated January 1, 1861. It contains a detailed account of the state of the Navy at the beginning of the year.

5. The fifth part of the document is a report from the Secretary of the War, dated January 1, 1861. It contains a detailed account of the state of the War at the beginning of the year.

6. The sixth part of the document is a report from the Secretary of the State, dated January 1, 1861. It contains a detailed account of the state of the State at the beginning of the year.

7. The seventh part of the document is a report from the Secretary of the War, dated January 1, 1861. It contains a detailed account of the state of the War at the beginning of the year.

8. The eighth part of the document is a report from the Secretary of the Navy, dated January 1, 1861. It contains a detailed account of the state of the Navy at the beginning of the year.

9. The ninth part of the document is a report from the Secretary of the Interior, dated January 1, 1861. It contains a detailed account of the state of the interior of the country at the beginning of the year.

10. The tenth part of the document is a report from the Secretary of the Treasury, dated January 1, 1861. It contains a detailed account of the financial state of the country at the beginning of the year.

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I. INTRODUCTION

Next to air and water pollution noise is the third major pollutant. There has been ample scientific evidence which documents its detrimental effects on human health and well-being. Yet many persons are only now becoming aware of the extent of noise pollution as auto traffic increases, and the number of household appliances multiplies. This Noise Element recognizes these trends and the relationships between noise and Land Use/Transportation. The Element also has relationships to the overall Master Plan goals of preserving Berkeley's character and promoting community safety.

Definition of Terms

In order to understand noise one must first have a clear understanding of the nature of sound. According to many acoustical engineers, sound may be defined as pressure variations in air or water which can be perceived by human hearing. Sound moves through the air somewhat like waves move in the ocean. The waves are alternate rings of compressed and then rarefied air moving away from a central source at a constant speed. As each wave - first a compression, then a rarefaction - encounters an object, it exerts a force - a push, then a pull - on the object. This is why sound can break a glass or cause a window screen to vibrate.

Noise may be defined as sound which is objectionable and disturbing to some individual. The objectionable nature of sound could be caused by it's pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity of the vibrations by which it is produced. High-pitched sounds, such as chalk scraping over a blackboard surface, are usually annoying to humans. Loudness is the intensity of sound waves combined with the reception characteristics of the ear. The intensity of a sound wave may be compared with the height of an ocean wave. In terms of sound's effect, intensity is how hard a sound wave hits an object.

In addition to the concepts of pitch and loudness, there are several noise measurement devices and scales which are used to describe the noise in a particular

FIGURE 1
SOUND LEVELS AND HUMAN RESPONSE

	Noise Level dB(A)	Response	Hearing Effects
	150		
Carrier Deck Job Operation	140		CONTRIBUTION TO HEARING IMPAIRMENT BEGINS
	130	Painfully Loud Limit Amplified Speech	
Jet Takeoff (200 feet) Discotheque Auto Horn (3 feet) Riveting Machine	120	Maximum Vocal Effort	
	110		
Jet Takeoff (2,000 feet) Garbage Truck	100		
New York Subway Station	90	Very Annoying Hearing Damage (8 hours)	
Heavy Truck (50 feet) Pneumatic Drill (50 feet)	80	Annoying	
Alarm Clock	70	Telephone Use Difficult	
Freight Train (50 feet) Freeway Traffic (50 feet)	60	Intrusive	
Air Conditioning Unit (20 feet)	50	Quiet	
Light Auto Traffic (100 feet) Living Room Bedroom Library	40		
Soft Whisper (15 feet)	30	Very Quiet	
Broadcasting Studio	20		
	10	Just Audible	
	0	Threshold of Hearing	

SOURCE: Environmental Protection Agency, Noise Pollution, August, 1973.

location. A decibel is a unit of measurement which indicates the relative intensity of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense (10×10), 30 decibels is 1,000 times more intense ($10 \times 10 \times 10$), etc. Therefore, one hundred decibels is 10 billion times as intense as one decibel.

The human ear also works logarithmically. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness. The noise produced by a heavy truck (90 decibels) seems twice as loud as an alarm clock (80 decibels), but four times as loud as freeway traffic (70 decibels) (see Figure 1).

There are several methods of measuring sound. The most common in California are the A weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive, primarily the middle frequencies. The Community Noise Equivalent Level, CNEL, is a measure of the cumulative noise exposure in a community, with greater weights applied to evening and nighttime periods. The Day-Night Average Sound Level, Ldn, is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this 3-hour period are grouped into the daytime period.

Format of the Element

Recent state law changes have expanded the framework and content of noise elements to include a community noise exposure inventory, mitigating measures and possible solutions to existing and foreseeable noise problems. The noise element is also to show how it will be integrated into the city's zoning plan and tied to land use and circulation elements, and to the local noise ordinance.

This element will first discuss, in a general manner, the effects of noise on people, then the existing noise environment in Berkeley will be discussed. Policies will be presented which encourage solutions to noise problems and issues.

Like other Master Plan Elements, this element is not intended as a specific plan. Rather, the element should be looked at as a beginning point from which more detailed proposals may be developed. The element provides a framework for future decisions.

II. THE EFFECTS OF NOISE ON PEOPLE*

Sound is of great value to humankind. It warns us of danger and appropriately arouses and activates us. Sound gives us the advantage of speech and language which can calm, excite, or elicit joy or sorrow. But not all sound is desirable. Sounds that are valuable in one location may travel to places where they may not only serve no desirable purpose, but may interfere with and disrupt useful activities. Other sound are noises only at certain times, in certain places, to certain people. Obviously, there is a value judgement involved among people about what sound is unwanted. This section does not discuss those values. Rather it is the relationships between the properties of noise and its effects on people that are presented.

Auditory Effects

Ear Damage - Exposure to intense noise can produce detrimental changes in the inner ear and seriously decrease the ability to hear. Some decreases are temporary for a few minutes or days after the termination of the noise, while others may be permanent throughout life or chronic whenever the noise exposure occurs.

The outer ear, eardrum, and middle ear (Figure 2) are almost never damaged by exposure to intense noise. The primary site of auditory injury from excessive exposure to noise is the receptor organ of the inner ear - the organ of corti. Three tiny bones called ossicles transmit vibrations to a fluid contained in the cochlea. Within the cochlea are microscopic hair cells that move back and forth in response to the sound waves just as seaweed on the ocean floor undulates in response to wave action in the ocean. The energy impulses created by the movement

*Most of this section is abstracted from two U.S. Environmental Protection Agency reports: Effect of Noise on People, Dec. 1971, and The Economic Impact of Noise, Dec. 1971.

of these crucial hair cells then go to the brain where they are interpreted as sound. Hair cells can be permanently damaged by too intensive sound waves.

Hearing Loss - The primary measure of hearing loss is the hearing threshold level or that level of a tone which can be detected by a person. The greater the hearing threshold level the greater the degree of hearing loss or partial deafness. In general, sound levels must exceed 60-80 decibels before a person will experience temporary threshold shifts, even for exposures that last as long as 8-16 hours. However, people differ in their susceptibility to temporary threshold shifts. One person may be susceptible to noises of low pitch, another to noises of medium pitch, and another to noises of high pitch.

As exposures are repeated on a daily basis, the ear becomes less able to recover from the temporary threshold shift present at the end of each day if one works in a noisy environment. However, a group of similarly exposed people will experience different threshold shifts: some will be larger than others. This reported observed difference is perhaps due to differences in susceptibility to noise, while some are due to actual differences in the noise levels encountered.

In addition to the hearing loss caused by constant exposure to noise, intense, impulsive, one-time exposure to noise, such as from a loud firecracker or the repeat from a fire arm, can cause both temporary and permanent hearing loss. Much of the hearing loss which occurs among youths is from this type of noise exposure (see Tables 1 and 2). The hearing loss which occurs as a person becomes older may be accelerated by the presence of noise.

Interference With Speech - In a highly technical society speech communication plays an extremely important role. Background noise can influence the accuracy, frequency, and quality of verbal exchange. Excessive background noise of over 60 decibels impairs conversation, formal education, occupation efficiency, family lifestyles, and the quality of leisure activities. Figure 3 shows how loud a person must speak to be heard with different background noise levels.

AUDITORY PRESENTATION OF INFORMATION

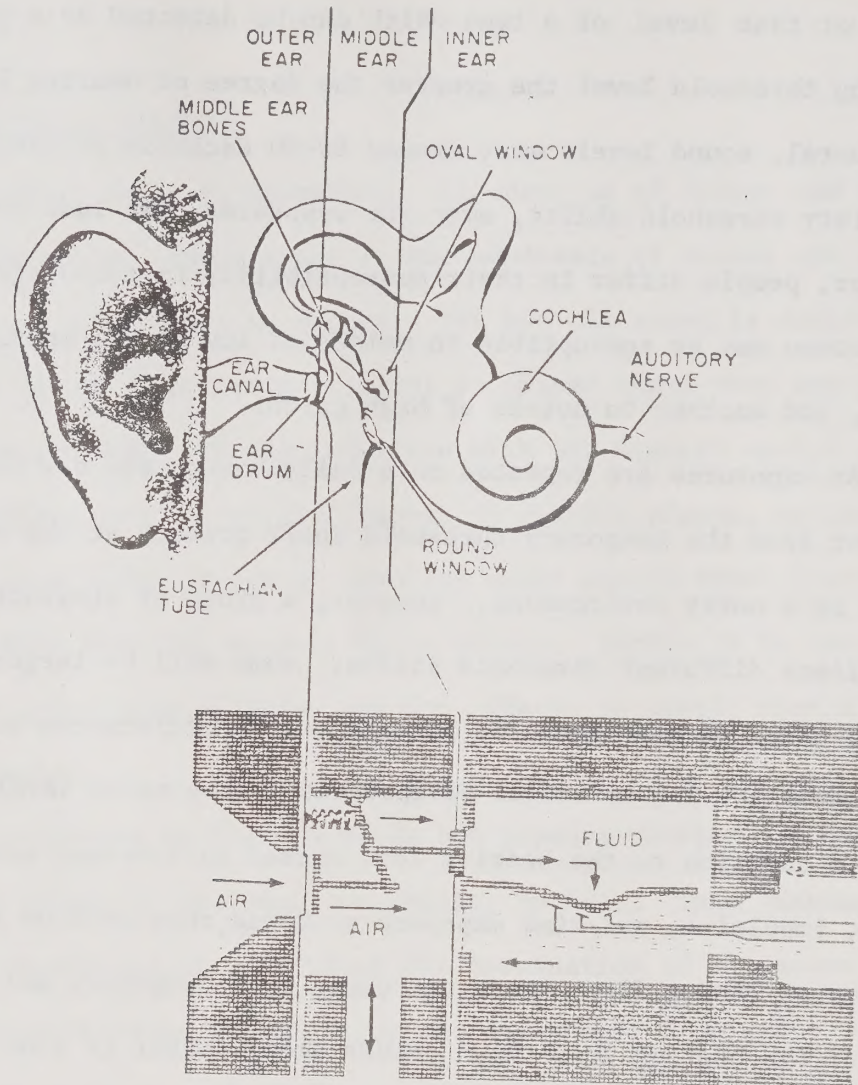


Figure 2. Functional Diagram of Ear

Cited from "Human Engineering Guide to Equipment Design" Editors - Morgan, Cook, Chapanis. Lund: McGraw Hill, 1963

Table 1

LIFETIME EXPOSURE TO NOISE (ILLUSTRATION)

	<u>Childhood</u>	<u>Youth</u>	<u>Maturity</u>
Cap Pistols	X		
Firearms		X	X
Rock & Roll Music		X	
<u>Transportation</u>			
School Bus	X	X	X
Automobile	X	X	X
Train (subway, elevated)		X	X
Aircraft		X	X
Household Appliances	X	X	X
Construction Equipment	X	X	X
"Community" (roadside, flight path)	X	X	X
<u>Recreational Vehicles</u>		X	X

X = Exposure to noise source

Source: The Social Impact of Noise, U.S. Environmental
Protection Agency, 1971

Table 2HEARING LOSS - BY AGE

Age Range	Population Totals (in thousands)	Loss of Hearing Totals (thousands)	Noise-Associated Hearing loss (thousands)
0-5	17,000	850	?
5-10	20,000	1,000-1,400	*200
10-18	32,500	650- 975	**150
18-65	113,000	2,260	2,000 (Approx)
over 65	20,000	4,000	400-600
TOTALS	202,500	8,760-11,135	2,750-2,950

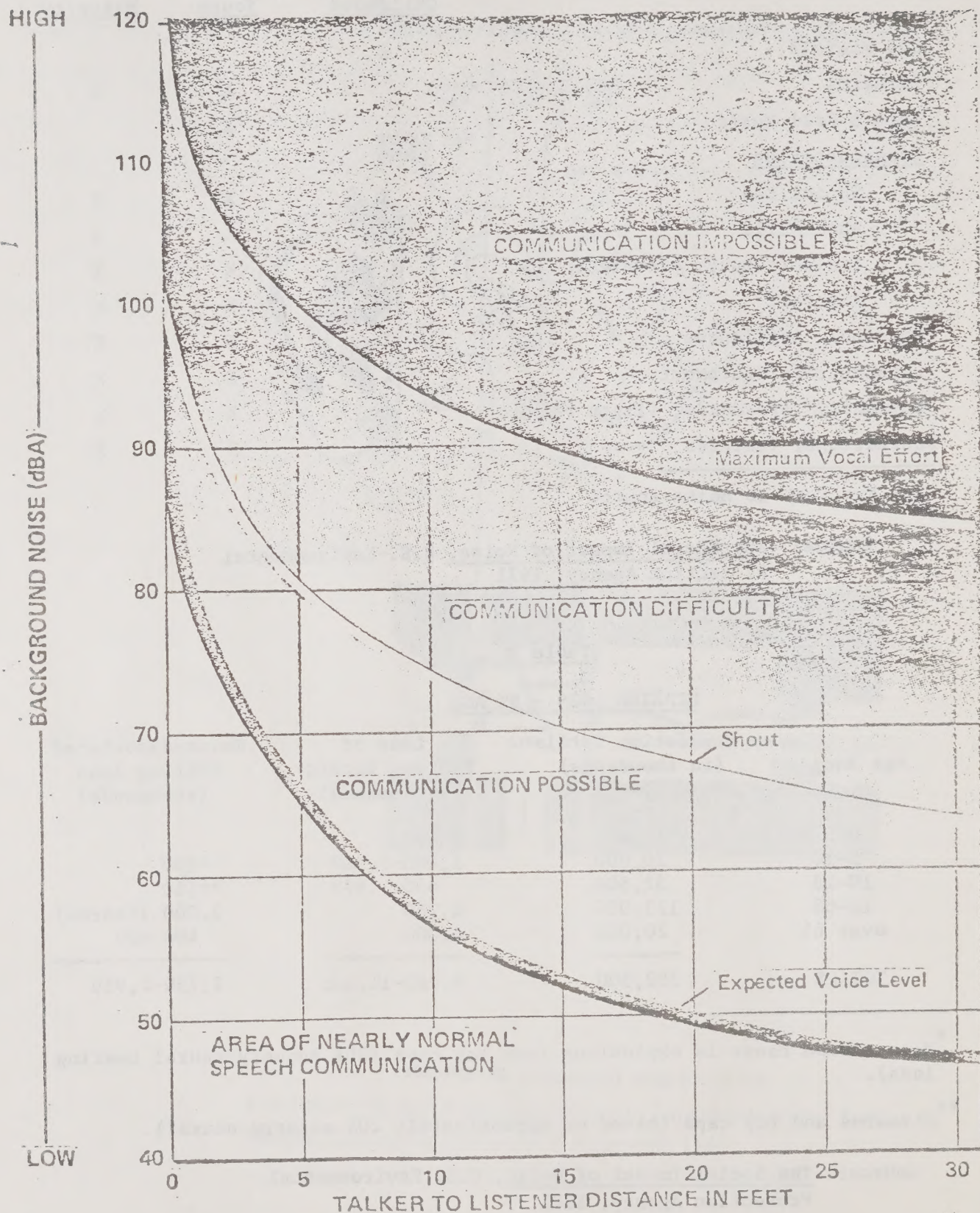
* Most common cause is explosions from toy caps (20% sensory-neural hearing loss).

** Firearms and toy caps (based on approximately 20% sensory-neural).

Source: The Social Impact of Noise, U.S. Environmental
Protection Agency, 1971

FIGURE 3

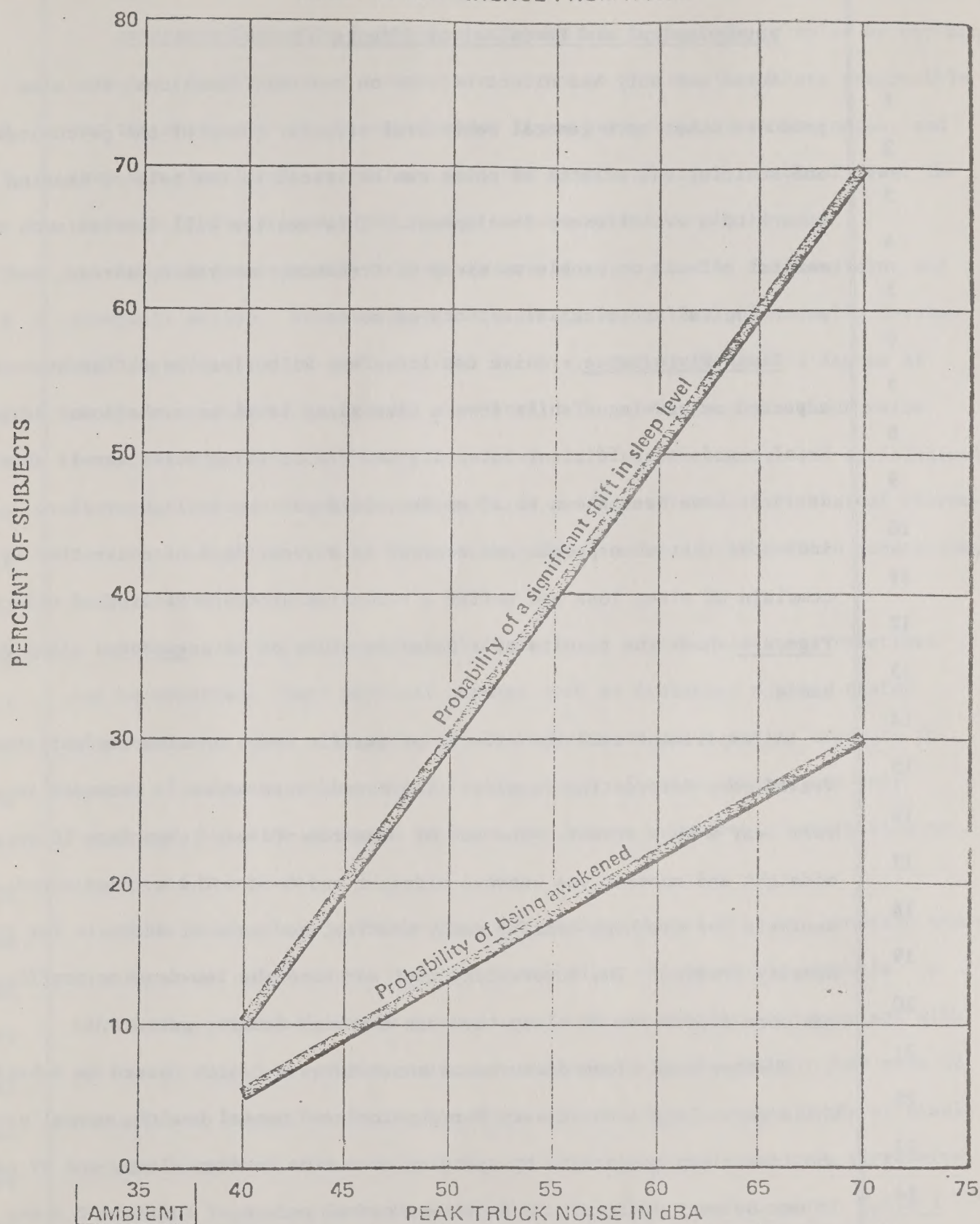
CONVERSATION INTERFERENCE FROM NOISE



SOURCE: U.S. Environmental Protection Agency, *Effects of Noise on People*, December 3, 1971.

FIGURE 4

SLEEP INTERFERENCE FROM NOISE



SOURCE: G.J. Thiessen and N. Olson, "Community noise-surface transportation," *Sound and Vibration* 2 (4): 10 (1968). National Research Council of Canada, Ottawa, 1968, "A Brief Study of a Rational Approach to Legislation Control of Noise," Report No. APS-467.

Psychological and Sociological Effects

Noise not only has direct effects on auditory functions, but also produces other more general behavioral effects. Many of the psychological and sociological effects of noise can be traced to the role of hearing in humankind's evolutionary development. This section will discuss such non-medical effects on people as sleep disturbance, annoyance, stress, and general psychological/sociological effects of noise.

Sleep Disturbance - Noise can interfere with sleep by either awakening a person or causing a shift from a deep sleep level to a shallower level. Brief sounds of sufficient intensity and fluctuating noise levels above 35-45 decibels have been shown to alter the sleep pattern to lighter sleep. Research indicates that when people are exposed to a great deal of noise they will complain of sleep loss and suffer a reduction of their feeling of well being. Figure 4 shows the results of a Canadian study of noise-induced sleep disturbance.

An experiment with the effects of traffic noise on sleeping patterns revealed some interesting results. The sounds were actually recorded in a bedroom near a busy street. One set of measurements was taken from 10 pm and midnight and another was between midnight and 4 am. The average sound was 70 decibels for the high-density early traffic, and only 61 decibels for the low-density traffic. The interesting fact was that the low-density traffic pattern was more disruptive of sleep than was the high-density pattern.

Whether such sleep disturbance constitutes a health hazard is debatable. While good sleep is necessary for physical and mental health, normal persons who lose sleep compensate by spending more time in deep sleep, and by napping. It may be very difficult to deprive a normal person of sufficient sleep to produce adverse health effects.

Annoyance/Community Response - Annoyance is a response to noise by certain persons. Highly annoyed persons are likely to believe that those responsible for the noise are not concerned about those being exposed to the noise, and they are also likely to believe that the source of noise is not of great importance to the economic and social success of the community.

Annoyance is probably a good measure of the potential for complaint and community action. Whether complaints or anti-noise actions actually develop will depend on social and political factors. Each individual's degree of annoyance cannot be accurately predicted. Those who complain about noise cannot be identified as having a special set of psychological and sociological characteristics. Complaints about noise are less tied to the physical characteristics of noise than to the circumstances surrounding the noise generation, such as from aircraft.

Stress - At noise levels of 85 decibels or more human stress reactions can be expected. Many physical changes such as dilating pupils, rising blood pressure, and acid secretion in the stomach occur during exposure to sounds of moderate volume and duration. Most of these changes are only temporary, but with constant exposure may become permanent, contributing to ulcers and heartburn.

While noise alone probably does not produce mental illness, constant exposure to noise makes people nervous, irritable, and generally unsettle. A 1969 London study of persons living near Heathrow Airport in comparison with persons living in a quieter environment found a significantly higher rate of admission to mental hospitals for them. In addition, another study of steelworkers found that those working in a noisy environment were more aggressive, distrustful, and irritable than workers in a quieter environment. Table 3 shows equivalent sound levels in decibels occurring inside various places.

Table 3
EQUIVALENT SOUND LEVELS IN DECIBELS NORMALLY
OCCURRING INSIDE VARIOUS PLACES⁶

SPACE	Leq(+)
Small Store (1-5 clerks)	60
Large Store (more than 5 clerks)	65
Small Office (1-2 desks)	58
Medium Office (3-10 desks)	63
Large Office (more than 10 desks)	67
Miscellaneous Business	63
Residences	
Typical movement of people—no TV or radio	40-45
Speech at 10 feet, normal voice	55
TV listening at 10 feet, no other activity	55-60
Stereo music	50-70

(+) These measurements were taken over durations typical of the operation of these facilities.

Source: Environmental Protection Agency, 1974.

The Economic Impact of Noise

A 1971 study regarding the economic impact of noise could only definitely assess the economic costs of aircraft noise. Costs were found to occur in terms of property easements, litigation, loss of industrial and residential property value, and insulation of the receiver (home or business) or the source (aircraft). Benefits from the abatement of aircraft noise are received by residential and industrial property owners as well as by airport operators and airlines. However, the article is careful to point out that since air travel is a major transportation mode necessary for a region's economic health, costly noise restrictions might retard economic development of that region.

The study found it difficult to assess the cost of noise within the home or from nearby freeways and streets because of a lack of verifiable data. The study does note that as trends in the growth of noise generators and in urban/suburban population concentrations continue, noise could become a more serious problem, nationwide, in the future. In some respects this increased emphasis on noise

problems has already begun in California through the requirement of a noise element in a city's General Plan.

III. THE EXISTING NOISE ENVIRONMENT

This section will discuss the existing noise environment in Berkeley in terms of sources of Berkeley noise and existing and projected noise impacted areas. Possible mitigating measures for noise control, including ties with the Land Use and Circulation Elements, will be proposed, as well as standards and criteria for noise abatement.

Sources of Berkeley Noise

There are several sources of noise in Berkeley. Roughly, they can be divided into three categories: transportation, industry, and the routine activity of people and things.

Transportation Modes - Noise generated by transportation modes is one of the major causes of noise and complaints about noise in Berkeley. The most prevalent source of transportation noise emanates from motor vehicles. This noise is generated by the vehicles themselves and by the interaction of the vehicles and their environment. The principal noises of motor vehicles stem from the exhaust, the engine intake, valving and gearing, the fan, and aerodynamic noise generated by passage of vehicles through the atmosphere.

The Berkeley Police Department maintains records concerning the number of citations issued dealing with Section 27150 of the Vehicle Code - the noisy muffler law. The Department's records show that 16 citations were issued during 1974, 5 citations during 1975, and 10 citations for the first five months of 1976 regarding noisy mufflers.

Industry - Industrial noise can effect both the workers in the various plants as well as the nearby residential and commercial land uses, as has been shown in the previous section of this element. The type of industry which Berkeley contains does

one emit a great deal of outside noise. Most noise from Berkeley industrial concerns emanates from outdoor industrial activities. These activities include storage operations and scrap yards.

Routine Activity of People and Things - This category includes such ordinary and diverse things as building air conditioners, especially high efficiency cooling towers on commercial and industrial buildings, leisure time activities, such as home workshop tools, television sets, and power mowers, barking dogs, arguments, and parties, are all sources of noise complaints.

While the Police Department does not maintain separate records for noise complaints, such statistics are grouped with ordinance violations such as abandoned property and abandoned animals. Of the complaints filed during 1975 for this category, approximately 24% or 2784 can be considered as noise complaints according to the Police Department. This figure is 945 more complaints than in 1974 when 1839 were filed.

Noise-Sensitive Areas

Generally speaking, noise-sensitive areas are those areas containing schools, hospitals, rest homes, and long-term medical or mental care facilities. These areas are by their very nature "quiet" places for the healing of illnesses and the formal education of students.

Present Noise Environment

A total of 42, 24-hour measurements were taken in September 1975 by the McDonnell/Douglas Corporation using the B&K 181 Digital Data Recorder. Measurements were taken while the Berkeley Unified School District was on strike and before U.C. classes resumed. A rate of one sample every three (3) seconds was used to record the environmental noise. The data from these locations were reduced on the B&K 321 Digital Data System, from which hourly equivalent sound values were retrieved. These hourly values were then used to calculate the day-night average sound level (L_{dn}) value for each of the 42 measurement locations. These locations are presented in Table 4.

TABLE 4

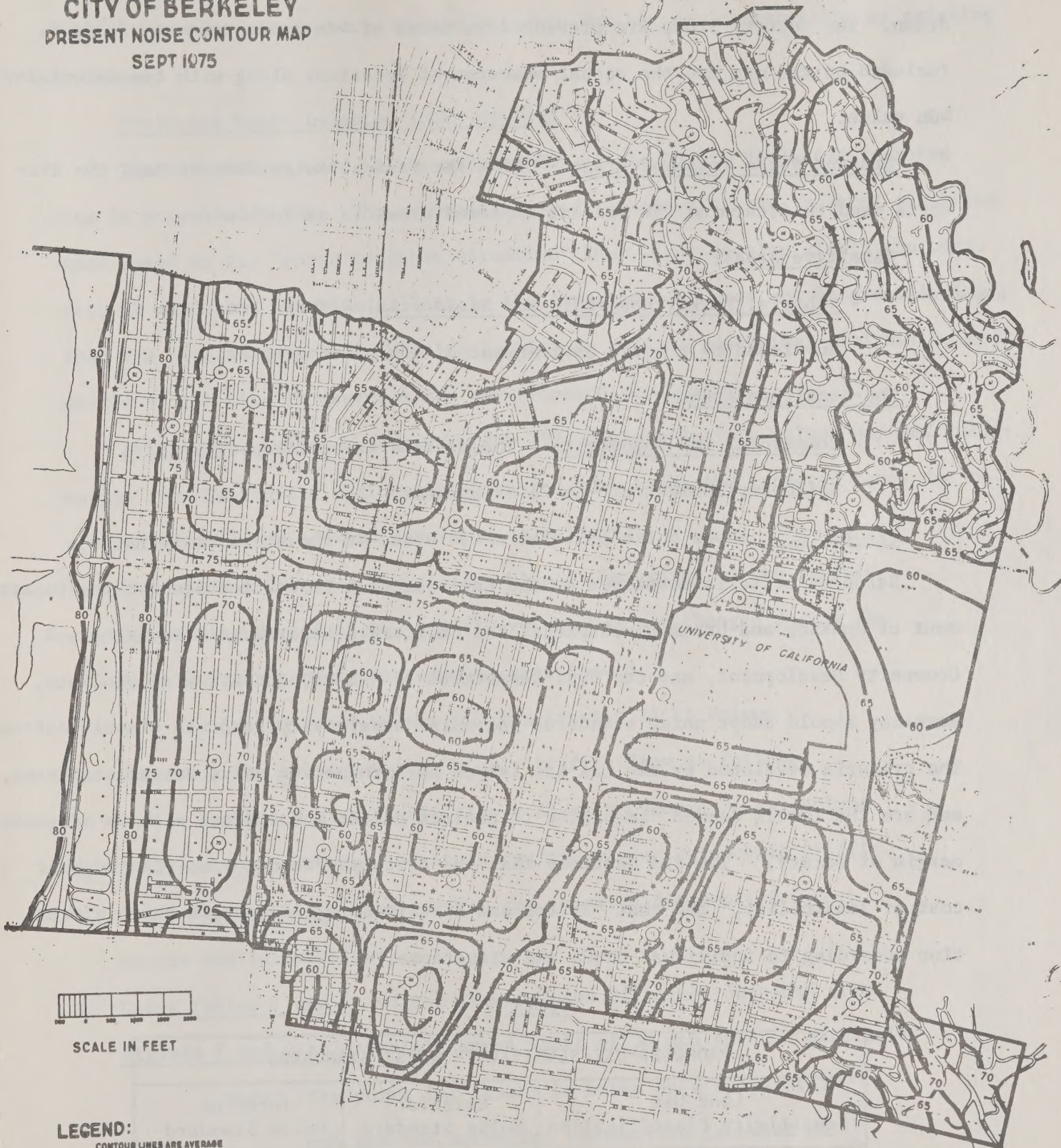
SITE NO.	DATE (1975)	LOCATION OF MEASUREMENT SITE	ADJUSTED Ldn VALUE
1	9/8 - 9/9	San Pablo Ave. near Cedar St.	74
2	9/8 - 9/9	University Ave. between 9th & 10th Streets	77
3	9/8 - 9/9	Peralta St. & Hopkins St.	62
4	9/8 - 9/9	Gilman St. between Curtis St. & Nielson St.	71
5	9/8 - 9/9	Sacramento St. between Virginia St. & Delaware St.	66
6	9/8 - 9/9	Cedar St. & Grant St.	62
7	9/9 - 9/10	Grove St. between Allston Way & Bancroft Way	71
8	9/9 - 9/10	Dwight Way & Milvia St.	69
9	9/9 - 9/10	College St. & Forest Ave.	70
10	9/9 - 9/10	Telegraph Ave. & Russell St.	70
11	9/9 - 9/10	Ashby Ave. & Ellsworth St.	71
12	9/9 - 9/10	Shattuck Ave. between Delaware St. & Francisco St.	70
13	9/10 - 9/11	Oxford St. between Allston Way & Kittredge St.	71
14	9/10 - 9/11	Shattuck Ave. & Adeline St.	70
15	9/10 - 9/11	Garber St. & Piedmont Ave.	62
16	9/10 - 9/11	Derby St. & Claremont Blvd.	71
17	9/10 - 9/11	Ellsworth St. between Stuart St. & Ward St.	59
18	9/10 - 9/11	Milvia St. between Francisco St. & Delaware St.	68
19	9/11 - 9/12	Action St. between Parker St. & Carleton St.	64
20	9/11 - 9/12	Eastshore Rd. & Page St.	81
21	9/11 - 9/12	Cedar St. between 2nd St. & 4th St.	82
22	9/11 - 9/12	8th St. between Page St. & Jones St.	62

TABLE 4 (Continued)

SITE NO.	DATE	LOCATION OF MEASUREMENT SITE	ADJUSTED L _{dn} VALUE
23	9/11 - 9/12	6th St. & Carmelia St.	69
24	9/11 - 9/12	Virginia St. & Cornell St.	61
25	9/12 - 9/13	Mabel St. & Oregon St.	67
26	9/12 - 9/13	Roosevelt St. & Channing Way	58
27	9/12 - 9/13	McGee Ave. & Russell St.	63
28	9/12 - 9/13	Ellis St. & Prince St.	62
29	9/12 - 9/13	Fairview St. & California St.	64
30	9/12 - 9/13	Monterey Ave. & Colusa Ave.	63
31	9/13 - 9/14	La Loma Ave. between Buena Vista Way & La Vereda Rd.	67
32	9/13 - 9/14	Eunice St. & Euclid Ave.	67
33	9/13 - 9/14	Spruce St. & Marin Ave.	68
34	9/13 - 9/14	Grizzly Peak Rd. & Shasta Rd.	67
35	9/13 - 9/14	Grizzly Peak Rd. & Keeler Ave.	59
36	9/13 - 9/14	The Arlington Ave. & Thousand Oaks Blvd.	67
37	9/15 - 9/16	Heinz St. & 8th St.	70
38	9/15 - 9/16	7th St. & Parker St.	70
39	9/15 - 9/16	Virginia St. & Scenic Ave.	63
40	9/15 - 9/16	Hearst Ave. between Scenic Ave. & Arch St.	70
41	9/15 - 9/16	Claremont Blvd. & Webster St.	67
42	9/15 - 9/16	Tunnel Rd. between Oakridge & The Uplands	75

Figure 6

CITY OF BERKELEY
PRESENT NOISE CONTOUR MAP
SEPT 1975



Based on these L_{dn} values, the Present Noise Contour Map (Figure 5) was drawn. The contour lines are presented in terms of L_{dn} in increments of L_{dn} 5. Included on the map are the actual measurement locations along with the calculated L_{dn} value.

Present Noise Impacted Areas - Using the Present Noise Contour Map, the criteria used to determine the present impacted areas is as follows:

Sensitive Areas:

- Schools, Parks, Hospitals and Residential - These areas are enveloped by a noise environment of L_{dn} 65 or greater;

Non-Sensitive Areas:

- Commercial and Industrial - These areas are enveloped by a noise environment of L_{dn} 75 or greater.

Figure 7. shows noise-impacted areas based on the above criteria.

Based on criteria developed by the Environmental Protection Agency, the Department of Housing and Urban Development, the California Department of Housing and Community Development, and the U.S. Department of Health, Education and Welfare, Berkeley should adopt noise standards for noise sensitivity land use classifications. The criteria developed by the EPA are issued as information only, not as standards, and are the levels deemed "requisite to protect health and welfare with an adequate margin of safety." The EPA cautions that the criteria "do not take into account cost or feasibility," and that "States and localities will approach this information according to individual needs and situations."

TABLE 5

PROPOSED USE-SENSITIVITY NOISE STANDARDS		
Land Use Sensitivity Classification	Exterior Noise Standard	Interior Noise Standard
SENSITIVE	L_{dn} 65	L_{dn} 55
NON-SENSITIVE	L_{dn} 75	L_{dn} 75

Source: McDonnell/Douglas

Most of Berkeley is impacted by noise. There are few areas in the city which do not exceed 65 Ldn. However, since the measurements are conducted on a citywide basis, specific measurements should be taken for any new construction or existing problems.

Projected Noise Impacted Zones to 1980

The methodology used in the preparation of the Future Projected Impacted Map is presented below. The assumptions used to determine the impacted distances were based on the "worst possible situation" that might develop within the city. Keep in mind that any site falling in the impacted zone does not necessarily imply that the site is impacted. What is implied is that an acoustical analysis be conducted at the site in question for any proposed development.

Arterials - Based on data from the 1972 24-hour Traffic Volume Map and information from the Traffic Engineering Division, the projected impacted zones due to arterial traffic noise were developed as follows:

1. No projected increase in traffic volume. According to the Traffic Engineering Division, the traffic volume has not changed during the past 20 years, and no increase is anticipated.

$$\text{Projected 24 hr Volume} = 1.0 \times \text{Present 24 hr Volume}$$

2. Determine the projected peak hourly traffic flow as follows:

$$\text{Projected Peak Hourly Flow} = 8\% \text{ of Projected 24 hr. Volume}$$

3. Estimate the percentage of truck traffic versus automobile traffic.
4. Using Figures 1 and 2, determine the impacted distances for both trucks and automobiles.
5. Using Tables 6 and 7, adjust the impacted distances obtained from Figures 1 and 2 to a vehicle speed limit of 30 mph for all arterials.

Note: The curve for trucks is based on a speed of 30 mph and the curve for automobiles is based on a speed of 60 mph.

6. Use the greater of the two impacted distances, either the truck or automobile value.

Figure 7

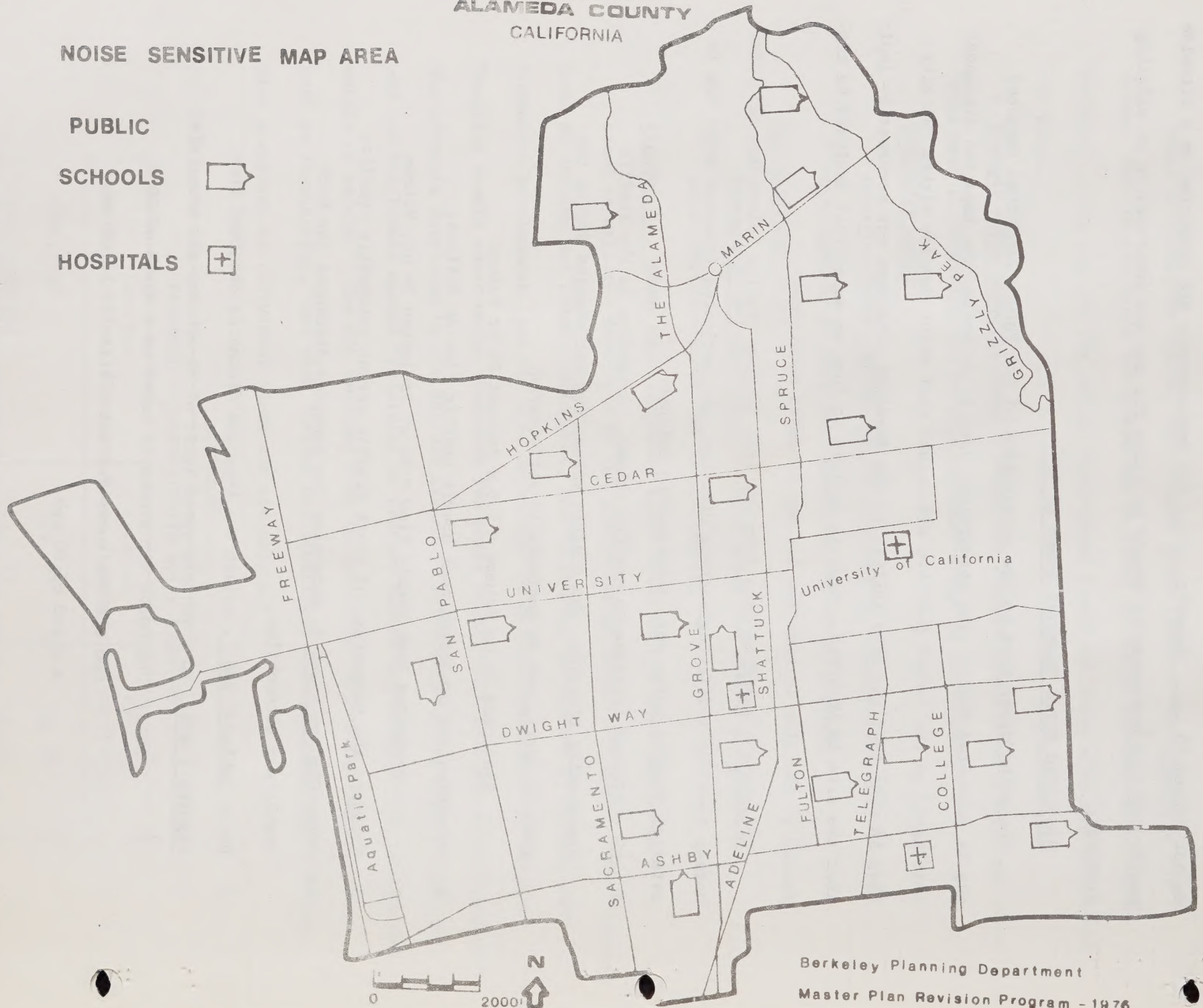
BERKELEY
ALAMEDA COUNTY
CALIFORNIA

NOISE SENSITIVE MAP AREA

PUBLIC

SCHOOLS

HOSPITALS



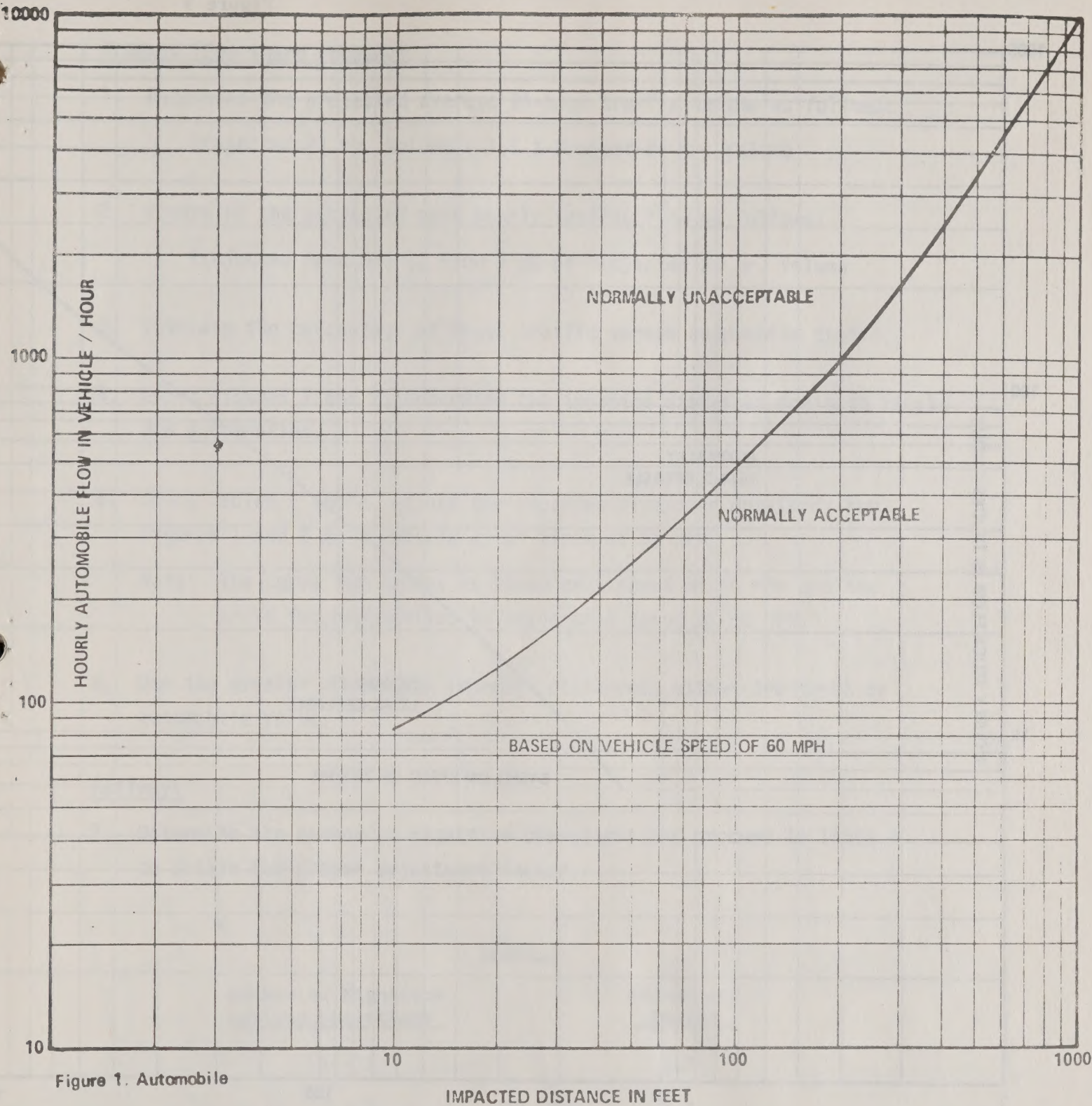


TABLE 1. Automobile

Mean Traffic Speed	Adjustment Factor
20	0.12
25	0.18
30	0.25
35	0.32
40	0.40
45	0.55
50	0.70
55	0.85
60	1.00
65	1.20
70	1.40

Figure 9

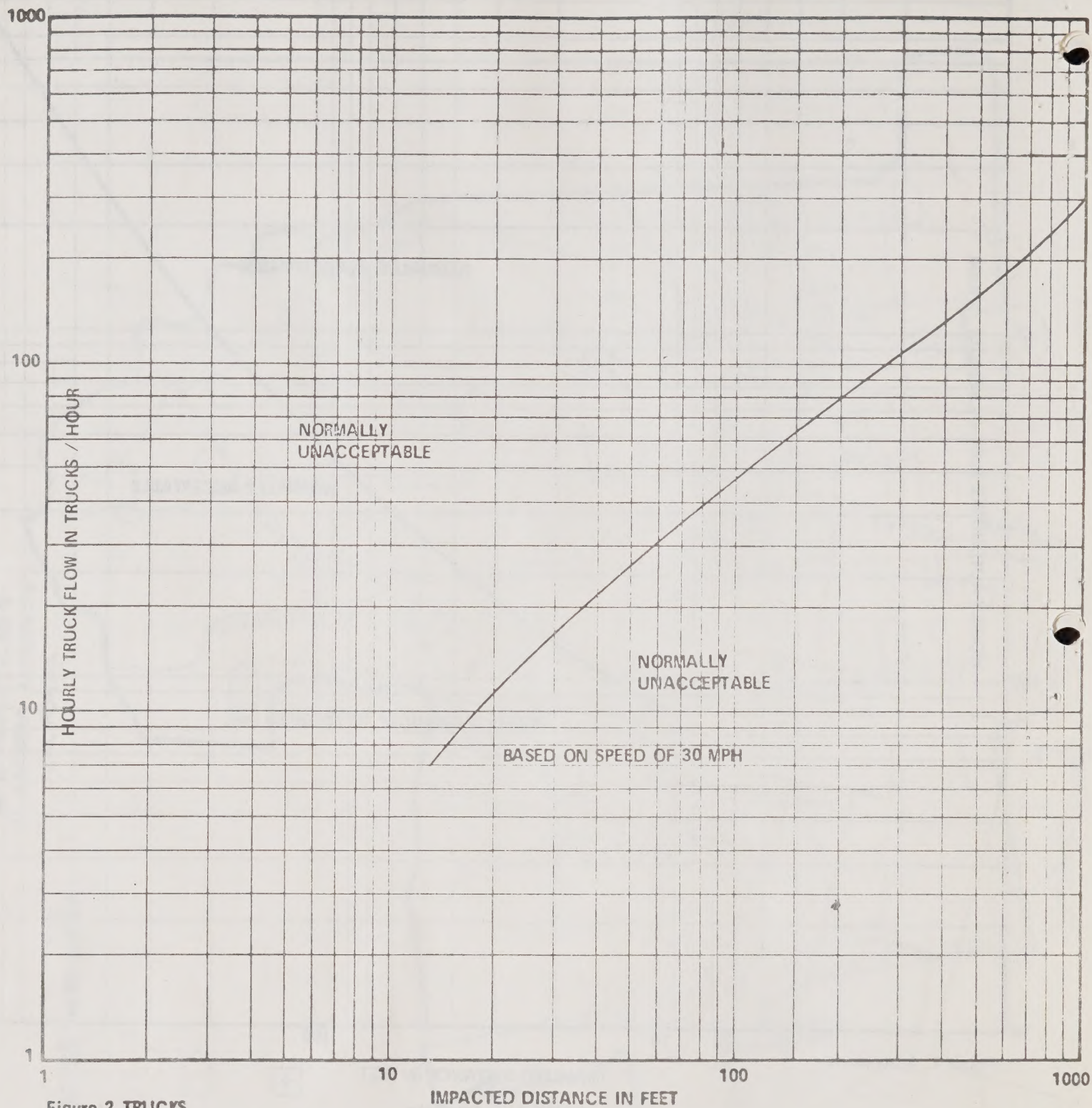


Figure 2. TRUCKS

TABLE 2. TRUCKS

Mean Traffic Speed	Adjustment Factor
20	1.60
25	1.20
30	1.00
35	0.83
40	0.75
45	0.69
50	0.63
55	0.57
60	0.50
65	0.43
70	0.43

Freeway (Eastshore Freeway)

1. Determine the projected average 24-hour traffic volume as follows:

$$\text{Projected 24 hr. Volume} = 1.5 \times \text{Present 24 hr. Volume}$$

2. Determine the projected peak hourly traffic flow as follows:

$$\text{Projected Peak Hourly Flow} = 8\% \text{ of Projected 24 hr. Volume}$$

3. Estimate the percentage of truck traffic versus automobile traffic.
4. Using Figures 1 and 2, determine the impacted distances for both trucks and automobiles.
5. Using Tables 1 and 2, adjust the impacted distances obtained from Figures 1 and 2 to a vehicle speed limit of 55 MPH.

Note: The curve for trucks is based on a speed of 30 MPH and the curve for automobiles is based on a speed of 60 MPH.

6. Use the greater of the two impacted distances, either the truck or automobile value.

Railways

1. Determine the number of nighttime operations and proceed to Table 3 to obtain the proper adjustment factor.

TABLE 3

<u>Number of Nighttime Railway Operations</u>	<u>Adjustment Factor</u>
1 - 2	3.3
3 - 5	1.7
6 - 9	1.2
10 or more	1.0

2. The dividing line used by HUD for Line-of-Sight Exposure between Normally Acceptable and Normally Unacceptable is 600 feet. Divide this value by the appropriate adjustment factor obtained from Table 3.

CITY OF BERKELEY
PROJECTED NOISE IMPACTED
ZONES TO 1980



LEGEND:

-  ARTERIAL IMPACTED ZONE, BASED ON VEHICLE SPEED OF 30 M P H
-  FREEWAY IMPACTED ZONE, BASED ON VEHICLE SPEED OF 55 M P H
-  RAILROAD IMPACTED ZONE

Possible Noise Mitigating Measures

As a 1970 report on noise problems points out, there must be a noise source and a noise receiver, and between them a path of noise transmission. The report then lists four basic procedures that may be taken to reduce noise inflicted on receivers, three* of which are applicable to Berkeley:

1. Control the noise at its source
2. Interrupt the noise path
3. Enclose the noise receiver

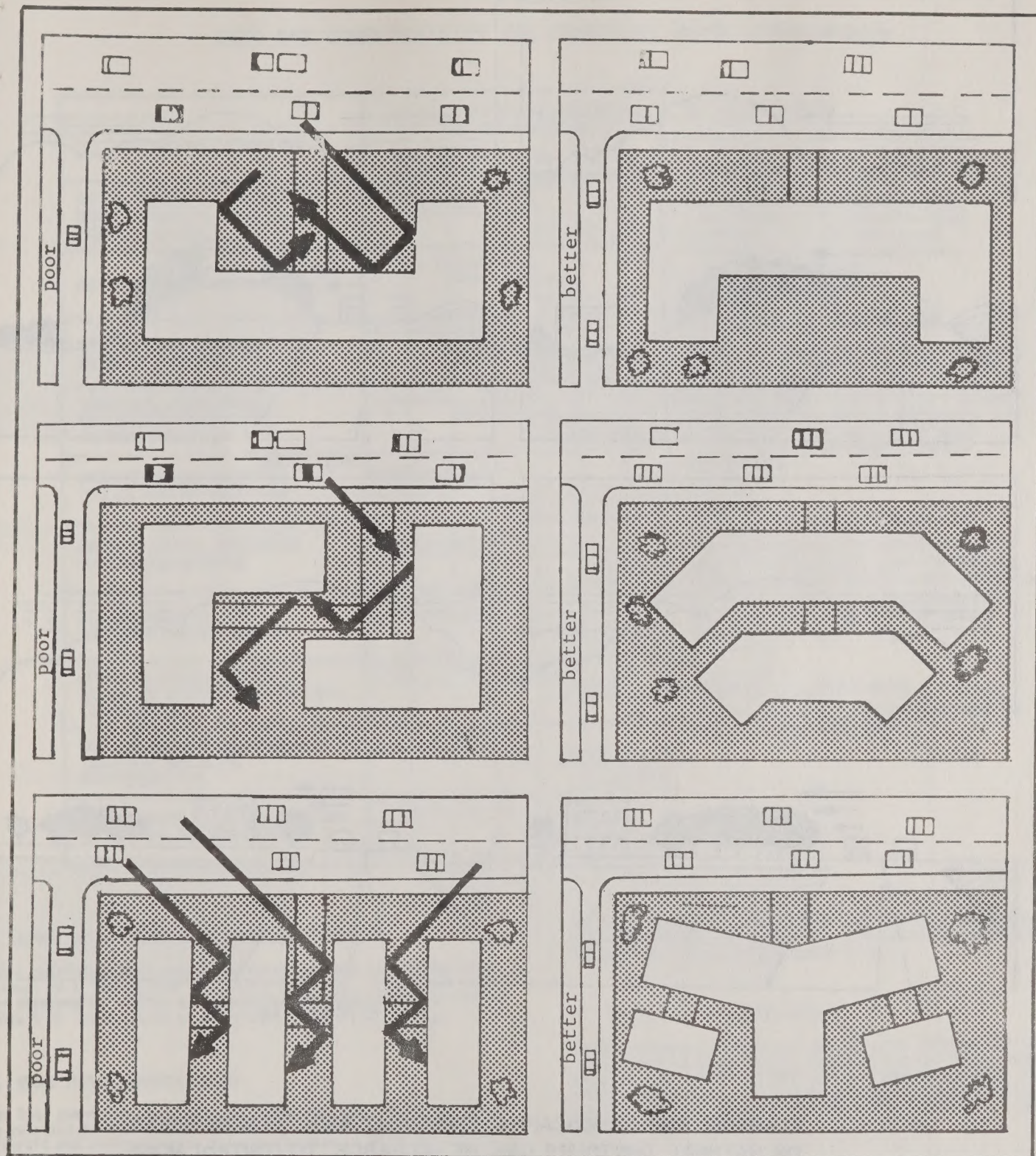
Of these three measures the primary avenue open to Berkeley through its police power is to control noise at its source. As a minimum this includes low noise specifications for new city-owned vehicles, and noise emission limits on public works projects. Public buildings should also be sufficiently insulated so that they may carry out their intended functions.

Aside from controlling noise at publically owned vehicles and buildings, cities can establish standards and criteria for interior and exterior noise. Such standards are typically developed for and contained in noise ordinances and the building code. The United States Environmental Protection Agency has prepared a model noise ordinance which may be adapted for use by Berkeley. This ordinance encourages a municipality to select its own standards for noise attenuation, recognizing noise as essentially a local issue.

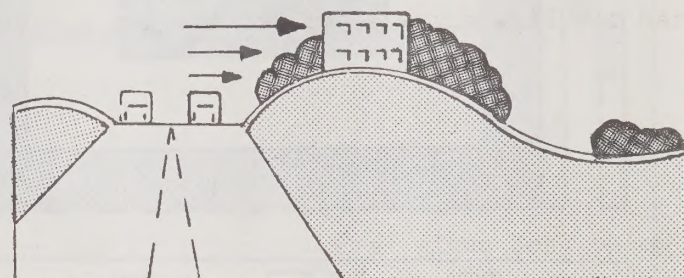
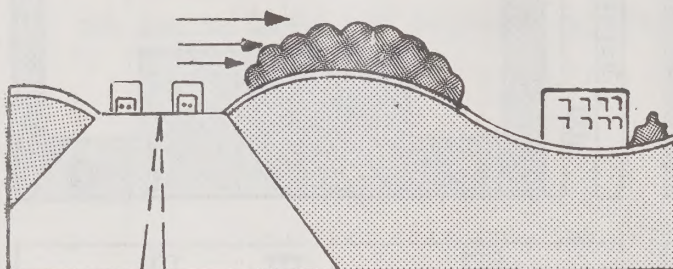
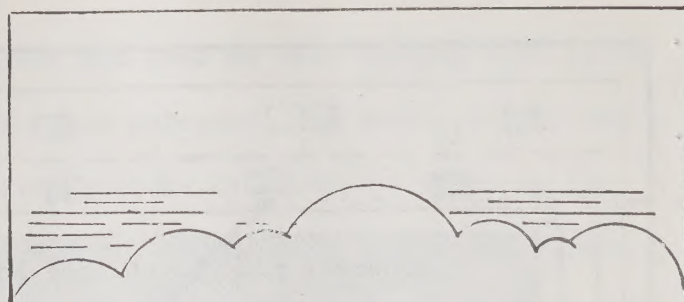
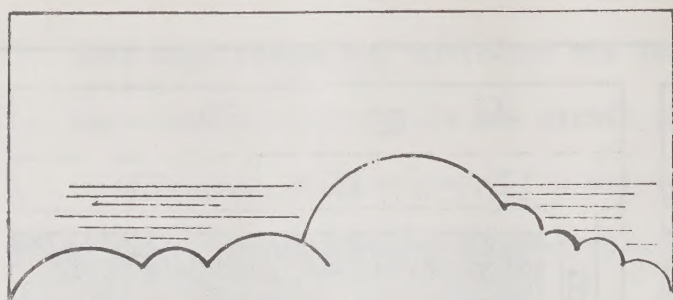
Obviously, legislation in the form of noise and zoning ordinances and building code amendments are not enough to mitigate against the adverse effect of noise. For example, physical barriers could be constructed to insulate nearby land uses from the effects of freeway noise. Careful placement of new residential structures along certain major streets, as proposed in the Land Use Element, should consider the effects of traffic generated noise as shown in Figure 11. State law now requires special noise insulation of new multi-unit dwellings constructed within the 60 dB noise exposure range. As state guidelines point out,

*The fourth method involves protection from aircraft noise.

this requirement may influence the location and cost of this housing type since major Berkeley arterials are within this noise category. An active public awareness program which explains the deleterious effects of excessive noise on the physical and psychological condition of people could also be conducted. Noise information generated from monitoring noise conditions should be integrated into the Zoning Ordinance pursuant to state guidelines as shown in Figure 12.

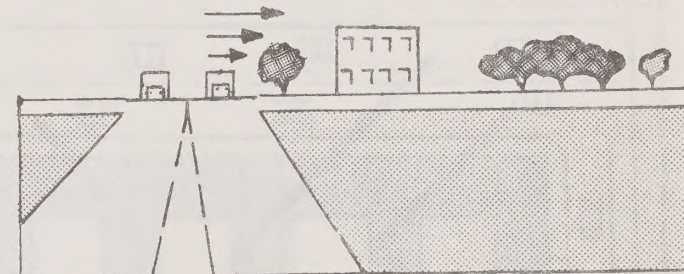
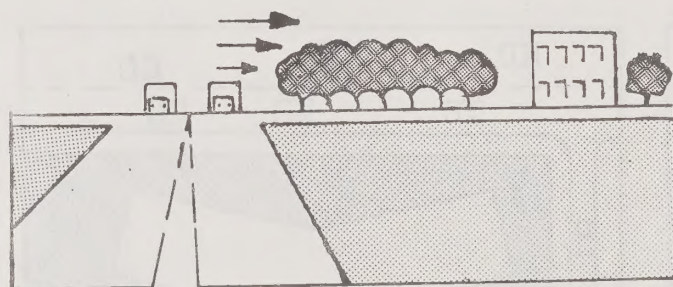
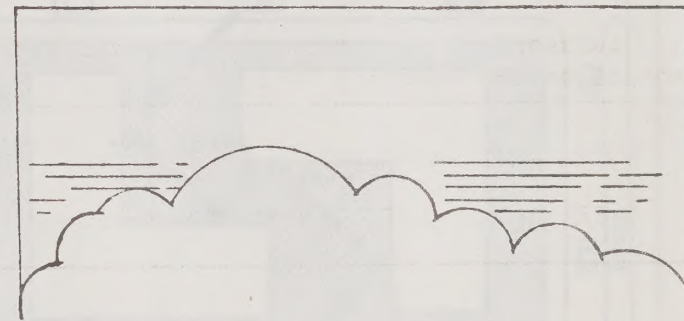
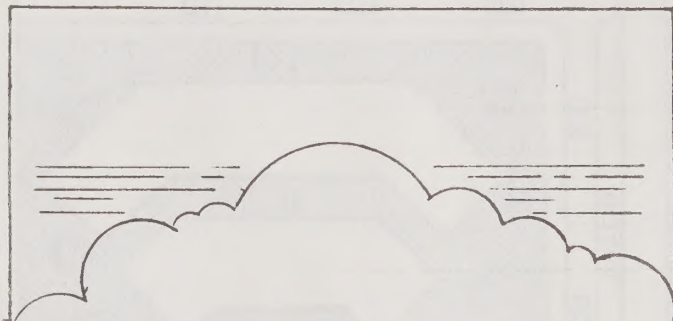


CAVITIES WHICH FACE OR SURROUND NOISE SOURCES AND ACT AS REVERBERATION CHAMBERS SHOULD BE AVOIDED, BUILDINGS WITH SPECIAL NOISE INSULATION CAN BE LOCATED FACING NOISE SOURCES AND ACT AS SHIELDS FOR OTHER PORTIONS OF THE SITE.



This

Not This



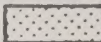
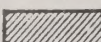
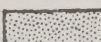
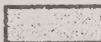
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Not This

PLANTING AND LANDSCAPING, ESPECIALLY WITH SOLID BARRIERS OR NATURAL CONTOURS CAN BE VALUABLE TO CONTROL NOISE. HOWEVER, PLANTS DO NOT REFLECT MUCH SOUND AND A VERY LARGE AMOUNT OF THICK FOLIAGE IS NEEDED TO ABSORB MEASURABLE AMOUNTS OF NOISE. A SINGLE ROW OF TREES OR BUSHES IS NOT AN EFFECTIVE NOISE BARRIER.

Figure 12

LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE L _{dn} OR CNEL, dB						INTERPRETATION
	55	60	65	70	75	80	
RESIDENTIAL — LOW DENSITY SINGLE FAMILY, DUPLEX, MOBILE HOMES							 NORMALLY ACCEPTABLE Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
RESIDENTIAL — MULTI. FAMILY							
TRANSIENT LODGING — MOTELS, HOTELS							 CONDITIONALLY ACCEPTABLE New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
SCHOOLS, LIBRARIES, CHURCHES, HOSPITALS, NURSING HOMES							
AUDITORIUMS, CONCERT HALLS, AMPHITHEATRES							 NORMALLY UNACCEPTABLE New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
SPORTS ARENA, OUTDOOR SPECTATOR SPORTS							
PLAYGROUNDS, NEIGHBORHOOD PARKS							 CLEARLY UNACCEPTABLE New construction or development should generally not be undertaken.
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETERIES							
OFFICE BUILDINGS, BUSINESS COMMERCIAL AND PROFESSIONAL							
INDUSTRIAL, MANUFACTURING UTILITIES, AGRICULTURE							

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or L_{dn}. Normalized values are obtained by adding or subtracting the constants described in Table 1 to the measured or calculated value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with

the Act, residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL or L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

Source: California State Guideline for Noise Element, 1976

IV. GOAL AND POLICY RECOMMENDATIONS

The goal and policies presented below are recommended actions to alleviate problems presented in the background section of this element.

Goal: Environmental noise shall be reduced to levels which will not harm the health and quality of life of Berkeley residents.

Policy 6.00

Establish standards for interior and exterior noise as given both below and in the noise ordinance:

Land Use Sensitivity Classification	Exterior Noise Standard	Interior Noise Standard
Sensitive (schools, hospitals, residence	L _{dn} 60	L _{dn} 45
Non-Sensitive (industrial, commercial)	L _{dn} 75	L _{dn} 55

Policy 6.01

Include land use compatibility for noise environments in administration of the existing zoning ordinance by establishing normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for land use categories as given in State noise guidelines in Figure 12.

Policy 6.02

Actively encourage the California Department of Transportation to provide visually pleasing sound attenuation devices for the East Shore Freeway (State Route 17) the Grove-Shafter Freeway (State Route 24), Ashby/Tunnel Road (State Route 13), and schedule the necessary share of local funding in the Capital Improvement Program (see Open Space Element).

1 Policy 6.03

2 Promote increased public awareness concerning the deleterious effects of
3 excessive noise on humans.

4 Policy 6.04

5 Support federal and state legislation to lower allowable noise levels on
6 all motor vehicles.

7 Policy 6.05

8 Actively enforce existing noise ordinances and sections of the Vehicle
9 Code pertaining to noise.

10 Policy 6.06

11 Establish noise emission limits for city public works projects.
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Appendix A

Administrative Technique

Zoning to Exclude Typically Incompatible Land Uses

Zoning to Require Buffer Strips

Zoning to Require Borms and Barriers

Zoning to Limit Building Height

Zoning to Require Acoustical Building Techniques

Zoning to Allow Cluster or Planned Unit Development

Subdivision Control Law

Building Codes

Health Codes

Special Permit Requirements

Environmental Impact Statements

Municipal Purchase of the Land

Other Municipal Acquisition of Land

Partial Ownership—Easements and conservation

Property Tax Incentives

Relaxation of Municipal Codes as a Financial Incentive

Architectural Review Boards

Municipal Design Services

Physical Result

Prevention of Incompatible Land Use

Buffer Strips

Path Disruption

Path Disruption

Insulation, Isolation, Absorption

Buffer Strips, Site Design, Path Disruption

Buffers, Borms, Barriers, Site Design, Path Disruption

Insulation, Isolation, Absorption

Most Techniques

Most Techniques

Most Techniques

Buffer Strips, Prevention of Incompatible Land Use

Buffer Strips, Prevention of Incompatible Land Use

Buffer Strips, Prevention of Incompatible Land Use

Prevention of Incompatible Land Use

Most Techniques

Most Techniques

Most Techniques

Situations Where Most Applicable

Where Demand for Typically Compatible Land Uses Is Significant

Where Land Values and/or Lot Sizes Permit

Where Other Physical Techniques are Not Practical

When Terrain Makes this Technique Effective

Where Other Measures are Inadequate

Where Large Undeveloped Areas Exist

Where Large Developments Rather Than Individual Buildings are Anticipated

Where Individual Lots are Being Developed

Anywhere State Laws Permit

Anywhere That the Permit Granting System Exists or Can Be Started

Anywhere Legal Under State Law

Where Development Pressures Make Less Absolute Measures Inadequate

Where Possible

Where Possible at Low Cost

Where Tax Pressures Exist on Owners of Undeveloped Land

Only Where Code Enforcement can be Relaxed Without Negative Side Effects

Where Appropriate Ability Exists on the Municipal Staff

Anywhere

<u>Effectiveness</u>	<u>Cost to the Municipality</u>	<u>Enforcement Mechanism</u>	<u>Comments</u>
High	Insignificant if Zoning Exists.	Note 1	May Make Land Worthless
High		Note 1	Easy to Implement in Low Density Areas
Varies with Terrain		Notes 1, 2, & 3	Often not Aesthetically Desirable
Varies with Terrain		Note 1	Effective in Limited Situations
High for Interiors, Low for Exteriors		Notes 1, 2, & 3	Can Cause Unnecessary Building Costs
High	Additional Review Procedure	Approval Procedure	Significant Potential Benefits, but Can be Misused
High	Insignificant if Subdivision Control Mechanism Already Exists	Notes 1 & 2	Not Always Applicable
High for Interiors, Low for Exteriors	Insignificant if Building Code Enforcement Already Exists	Notes 1 & 2	Limited to Few Physical Techniques
High	Insignificant Addition to Present Health Department Costs	Varies	Highly Effective
High	Limited Cost if Special Permit Mechanism Already Exists	Note 1	Site Specific Analysis for Each Case
Varies	Varies with Enforcement Mechanisms	Varies	Comprehensive
High	High	Possession	Can be Undesirable Policy for Municipality
High	Often Insignificant	Possession	Effective
High	Often Insignificant	Possession	Effective and Often Inexpensive
Varies with Response	Varies	Incentive	Easy to Implement, Inexpensive
Varies	Insignificant	Incentive	Inexpensive
Low; Dependent on Enforcement Mechanism	Often Insignificant; Depends on Administration	Varies	Site Specific Analysis for Each Case
Low	Insignificant	Information; Public Pressure	Very Expensive

Note 1: Denial of Building or Special Permits

Note 2: Occupancy Permits

Note 3: Performance Bond

Appendix B

Physical Technique

Potential Effectiveness

Situations Where Most Effective

Acoustical Site Planning

Good-excellent: depends on size of lot and natural terrain

Before building construction, before subdivision development

Acoustical Architectural Design

Fair

Before building construction

Acoustical Construction

Excellent for interior, poor for exterior

During building construction best. More costly after construction

Barriers

Fair-excellent, depends on height and mass

Varies with type of barrier

Earth Berms

Good-excellent

Best during road construction when earth is available. Costly after road construction. Impractical in densely populated areas where land is scarce.

Walls and Fences

Poor-excellent, depends on height and mass

Any time

Plantings

Poor

After road construction
After building construction

Combinations

Good-excellent

Depends on particular combination

Cost	Relevant Administrative Technique	Comments
Low, only costs are fees of acoustical consultant and site planner	Zoning, subdivision rules, building code	Fairly inexpensive but requires space which may be unavailable. Has limited sound reduction. Positive aesthetic impacts.
Low: only cost is that of acoustical consultant	Building code* Health code	Low cost but limited effectiveness
Varies with amount of noise reduction desired but generally high, especially after construction	Building code* Health code	Most effective noise reduction for interiors, but very costly. Note that exterior noise levels are not reduced. Individual components (acoustical walls, windows, ceilings, doors) must be used together to be effective.
Moderate-high: varies with type of barrier, see below.	Zoning, subdivision rules, health code	High noise reduction and potentially low cost. Achieves exterior noise reduction. Can have adverse aesthetic impacts.
Moderate-high: depends on availability of earth		Good noise reduction properties and aesthetic appeal, but requires space and requires maintenance
Low-high: depends on height and thickness		Requires little space and no maintenance, but may be aesthetically unappealing and can reflect noise to other side of road.
Moderate-high: depends on size of buffer strip		Poor noise reduction but often necessary for aesthetic appeal. Best used in combination with other techniques
Moderate-high: depends on type barriers used.		Potentially high noise reduction and aesthetic appeal.

*Administrative techniques which can achieve any physical technique are health codes, occupancy permit procedures, architectural review boards, and municipal design services.

NOISE IMPACT ON HUMAN ACTIVITIES

HUMAN ACTIVITY	IMPACT ESTIMATE FOR CNR & CNEL						
	CNEL	45	55	65	75	85	95
	CNR	70	85	100	115	130	145
Intensive Conversation							
Casual Conversation							
Telephone Use							
Sleeping							
Eating							
Reading							
Meditation							
Writing							
Studying							
Seminar, Group Discussion							
Classroom, Lecture							
Individual Creative Activity							
Live Theater							
Watching Films							
Watching Television							
Listening to Music							
Ceremony, Tradition							
Public Events, Assemblies							
Spectator Sports ¹							
Public Mass Recreation ¹							
Physical Recreation ¹							
Outdoor Activities ¹							
Urban Outdoor Activities ¹							
Extended Child Care							
Driving ¹							
Shopping							
Technical Manual Work							
Skilled Manual Work							
Manual Work							
Equipment Operation ²							
Repetitive Work							
Noise-Sensitive Equipment ²							

 LOW IMPACT: Activity can be performed with little or no interruption from aircraft noise, though noise may be noticeable above background levels.

 MODERATE IMPACT: Activity can be performed but with some interference from aircraft noise due to level or frequency of interruptions.

 SERIOUS IMPACT: Activity can be performed but only with difficulty in the aircraft noise environment due to level or frequency of interruptions.

 CRITICAL IMPACT: Activity cannot be performed acceptably in the aircraft noise environment.

SOURCE: U. S. Department of Housing and Urban Development, *Aircraft Noise Impact: Planning Guidelines for Local Agencies*, by Wiley & Ham and Bolt, Baransk and Newman, 1972.

1. No allowance for structural insulation.

2. Depends on characteristics of particular equipment.

TABLE 3
RECOMMENDED MAXIMUM AVERAGE OUTDOOR NOISE LEVELS

To prevent hearing damage	80 Decibels, L_{dn} *
For conversation	63
For sleeping	60
To prevent annoyance	60

*Day-night average sound level.

SOURCE: Environmental Protection Agency, Impact Characterization of Noise Including Implications of Identifying and Achieving Levels of Cumulative Noise Exposure, July, 1973.

COMPATIBLE LAND USES IN AIRPORT NOISE ZONES

The U.S. Department of Housing and Urban Development (HUD) has commissioned the preparation of guidelines for the compatibility of different land uses in noise zones around airports. These guidelines were prepared by the firm of Wilsey and Ham and are based on noise sensitivity factors for each type of land use.* The sensitivity factors are:

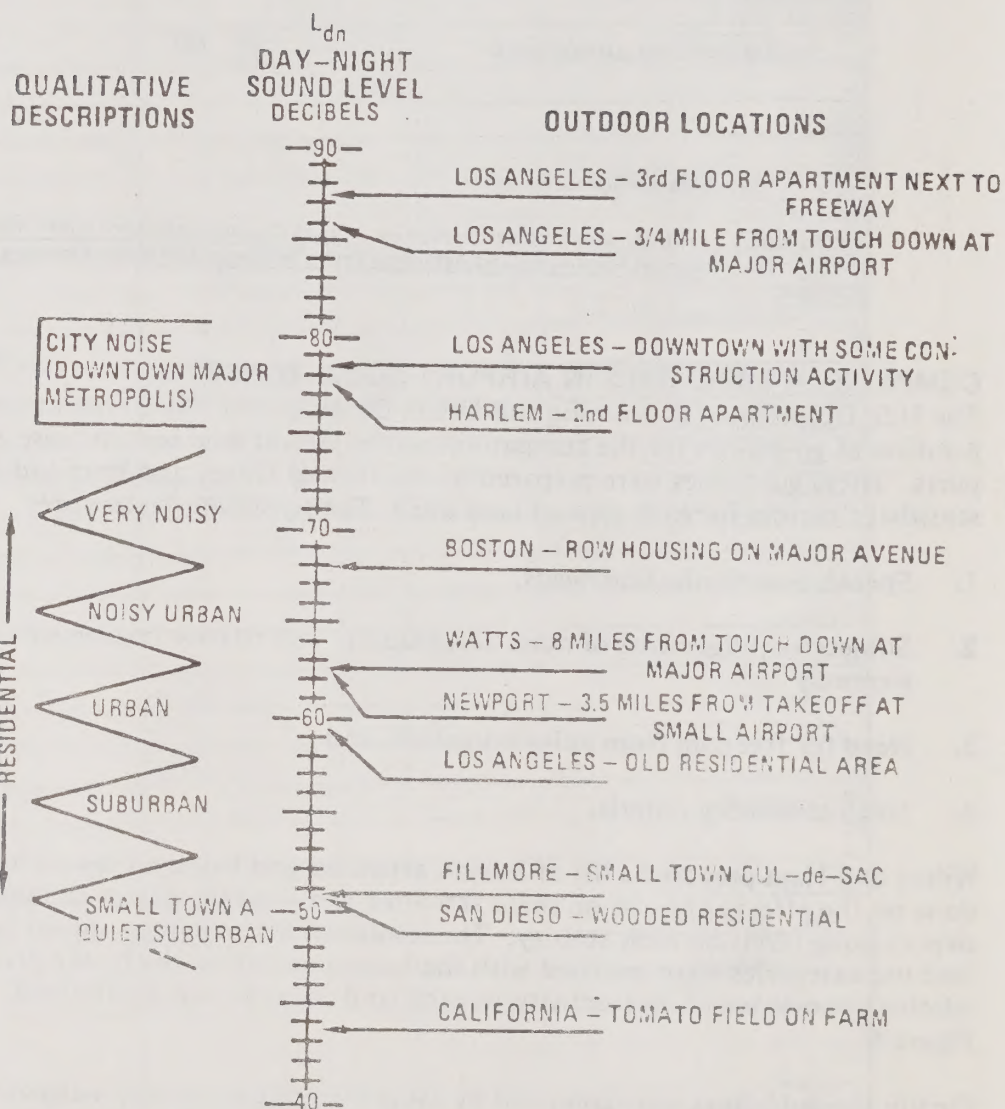
1. Speech communication needs,
2. Subjective judgements of noise acceptability and relative noisiness by people living near airports,
3. Need for freedom from noise intrusions, and
4. Sleep sensitivity criteria.

Wilsey and Ham prepared a list of human activities, and based on research which has been done on the effects of noise on these activities, analyzed the degree of impact of different airport noise levels on each activity. The results of this analysis is shown in Figure 5. Next, land use categories were matched with the human activities which take place in each and the relative importance of each activity to each land use type was determined. This is shown in Figure 6.

Finally the guidelines were compiled by assigning noise sensitivity weights to each land use based on the sensitivity of the human activities which are associated with each land use category. The guidelines are shown in Figure 7. The land use categories in Figure 7 vary in noise sensitivity from residential, which is rated 1, to public right-of-way, which is rated 5. The acceptability categories (clearly acceptable, normally acceptable, normally unacceptable, and clearly unacceptable) indicate the suitability for new construction or development for each land use. These guidelines are intended as refinements to the less precise guidelines which were promulgated by HUD in August, 1971 in HUD Circular 1390.2.

*Aircraft Noise Impact, Planning Guidelines for Local Agencies, U.S. Department of Housing and Urban Development, November, 1972.

Appendix D

Figure 1. Outdoor Day-Night Sound Level in dB (re 20 micropascals) at Various Locations⁴

An examination of the numerical values obtained by using two periods versus three periods per day shows that for any reasonable distribution of environmental noise levels, the two-period day and the three-period day are essentially identical; i.e., the 24-hour equivalent sound levels are equal within a few tenths of a decibel. Therefore, the simpler two-period day is used in this document, with daytime extending from 7 a.m. to 10 p.m. and nighttime extending from 10 p.m. to 7 a.m. The symbol for the 15-hour daytime equivalent sound level is L_d , the symbol for the 9-hour nighttime equivalent sound level is L_n , and the day-night weighted measure is symbolized as L_{dn} .

The L_{dn} is defined as the A-weighted average sound level in decibels (re 20 micropascals) during a 24-hour period with a 10 dB weighting applied to nighttime sound levels. Examples of the outdoor present day (1973) day-night noise level at typical locations are given in Figure 1.

3. L_{eq} for the 24-hour average sound level to which an individual is exposed ($L_{eq}(24)$): This situation is related to the cumulative noise exposure experienced by an individual irrespective of where, or under what situation, this exposure is received. The long-term health and welfare effects of noise on an individual are related to the cumulative noise exposure he receives over a lifetime.

Relatively little is known concerning the total effect of such lifetime exposures, but dose-effect relations have been studied for two selected situations:

- a. The average long-term exposure to noise primarily in residential areas leading to annoyance reactions and complaints.
- b. The long-term effects of occupational noise on hearing, with the daily exposure dose based on an eight-hour work day.

An ideal approach to identifying environmental noise levels in terms of their effect on public health and welfare would be to start by identifying the maximum noise not to be exceeded by individuals. However, the noise dose that an individual receives is a function of lifestyle. For example, exposure patterns of office workers, factory workers, housewives, and school children are quite different. Within each group the exposures will vary widely as a function of the working, recreational, and sleeping patterns of the individual. Thus, two individuals working in the same office will probably accumulate different total noise doses if they use different modes of transportation, live in different areas, and have different TV habits. Examples of these variations in noise dose for several typical life styles are provided in Appendix B. However, detailed statistical information on the distribution of actual noise doses and the relationship of these doses to long-term health and welfare effects is still missing. Therefore, a realistic approach to this problem is to identify appropriate noise levels for

ACTIVITIES ASSOCIATED WITH COMMON LAND USE CATEGORIES⁴

LAND USE CATEGORY	SLUCM CODE ¹	HUMAN ACTIVITIES																															
		Intensive Conversation	Casual Conversation	Telephone Use	Sleeping	Eating	Reading	Meditation	Writing	Studying	Seminar, Group Discussion	Classroom, Lecture	Individual Creative Activity	Live Theater	Watching Films	Watching Television	Listening to Music	Ceremony, Tradition	Public Events, Assemblies	Spectator Sports	Public Mass Recreation	Physical Recreation	Outdoor Activities	Urban Outdoor Activities	Extended Child Care	Driving	Shopping	Technical Manual Work	Skilled Manual Work	Manual Work	Equipment Operation	Noise-Sensitive Equipment	
Residential - Single Family, Duplex	11x ²	M	M	M	H	H	M	M	M	M	M	L	H	L	L	H	M	H	L	L	L	M	M	H	H	L	L	L	M	M	L	L	
Residential - Mobile Homes	14	M	M	M	H	H	M	M	M	M	M	L	H	L	L	H	M	H	L	L	L	M	L	H	H	L	L	L	M	M	L	L	
Residential - Multiple Family, Dormitories, etc.	11x, 12, 13, 19	M	M	M	H	H	M	M	M	M	M	L	H	L	L	H	M	H	L	L	L	M	L	H	H	L	L	L	M	M	L	L	
Transient Lodging	15	L	M	M	H	H	M	M	L	M	M	L	L	L	L	H	M	L	L	L	L	L	M	M	L	L	L	L	L	L	L	L	
School Classrooms, Libraries, Churches	68, 7111	H	M	M	L	L	H	M	H	H	H	H	L	L	M	M	H	H	L	L	L	M	L	H	H	L	L	L	M	M	L	L	
Hospitals, Nursing Homes	651	M	M	M	H	H	M	M	L	L	M	L	M	M	L	M	M	L	L	L	L	M	L	M	H	L	L	H	M	M	L	M	
Auditoriums, Concert Halls, Music Shells	721	L	M	L	L	L	L	L	L	L	L	H	L	L	M	L	H	L	H	H	H	L	L	L	L	L	L	L	L	L	L	H	
Sports Arenas, Outdoor Spectator Sports	722	L	M	L	L	L	L	L	L	L	L	L	H	L	L	L	L	H	H	H	L	L	L	L	L	L	L	L	L	L	L	H	
Playgrounds, Neighborhood Parks	761, 762	L	M	L	L	L	M	M	L	L	M	L	M	L	L	L	L	L	L	L	M	L	M	M	H	H	L	L	L	L	L	L	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	741x, 743x, 744	L	M	L	L	L	L	M	L	L	L	L	L	M	L	L	L	L	L	L	L	H	M	H	L	L	L	L	L	L	L	L	
Office Buildings, Personal, Business and Professional	61, 62, 63, 64, 65 ³	M	M	M	L	L	L	L	M	L	H	M	M	L	L	L	L	L	L	L	M	L	L	L	L	L	L	L	L	L	L	M	
Commercial - Retail, Movie Theaters, Restaurants	53, 54	M	M	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	
Commercial - Wholesale, Some Retail, Industrial, Manufacturing, Utilities	50, 57, 59, 61, 52, 64	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	M	L	H	H	M	
Manufacturing, Communications (Noise Sensitive)	2, 3, 4	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	M	
Livestock Farming, Animal Breeding	35, 47	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L	
Agriculture (except Livestock), Mining, Fishing	815, 816, 817, 81, 82, 83, 84, 85, 91, 93	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	L
Public Right-of-Way	45	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	M	M	L	H	L	L	L	L	H	L	L	
Extensive Natural Recreation Areas	91, 92, 93, 99, 7491, 75	L	L	L	H	H	L	M	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	M	L	H	L	L	L	L	L	L	

H: Activity critical to normal function of land use.

M: Activity important to normal function of land use.

L: Activity of secondary importance — land use generally able to function satisfactorily if activity cannot be performed.

1. Standard Land Use Coding Manual.

2. "x" represents a SLUCM category narrower or broader than, but generally inclusive of, the category described.

3. Except hospitals.

4. Matrix is intended as a guide to assist local planners in establishing a similar table for their particular community and land use classification system.

Appendix F

CLASSIFICATIONS OF ONGOING NOISE EXPOSURE

Type of Exposure	Typical Examples
Steady-State	Weaving room noise; sound of a waterfall; shipboard noise; interior of a vehicle or aircraft noise; turbine noise; hum of electrical sub-station.
Fluctuating Noise	Many kinds of processing or manufacturing noise. Traffic noise; airport noise; many kinds of recreational noise (e.g., vehicle-racing; powered lawnmowing; radio and TV).
Intermittent Noise	Many kinds of industrial noise (especially in construction work, ship building, forestry, aircraft maintenance, etc.); Many kinds of recreational noise (e.g., rock concerts, chain-sawing); light traffic noise; occasional aircraft flyover noise; many kinds of domestic noise (e.g., use of electrical appliances in the home); school noise.

Source: U.S. Environmental Protection Agency

INSTANTANEOUS PRESSURE OF IMPULSE

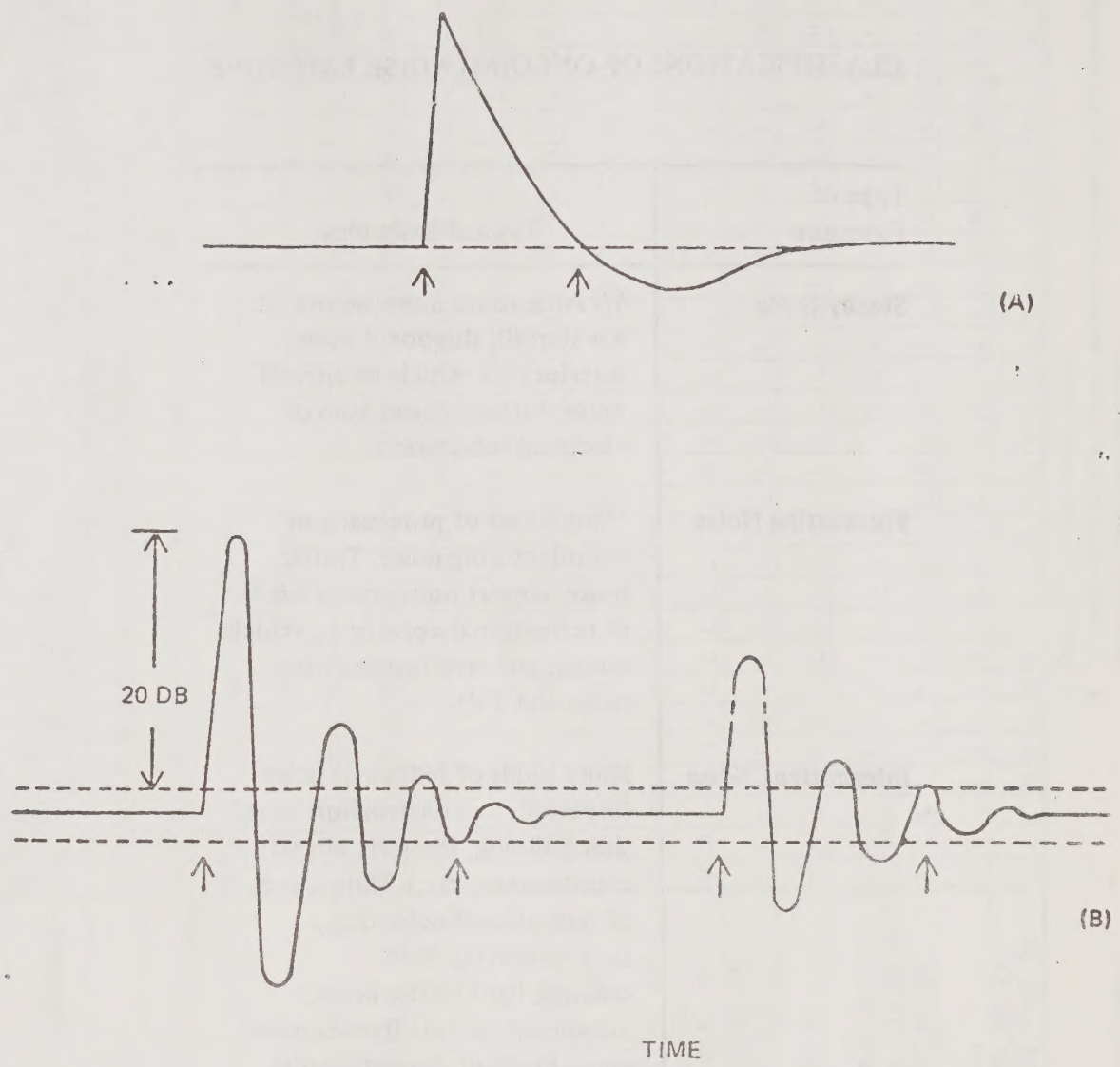
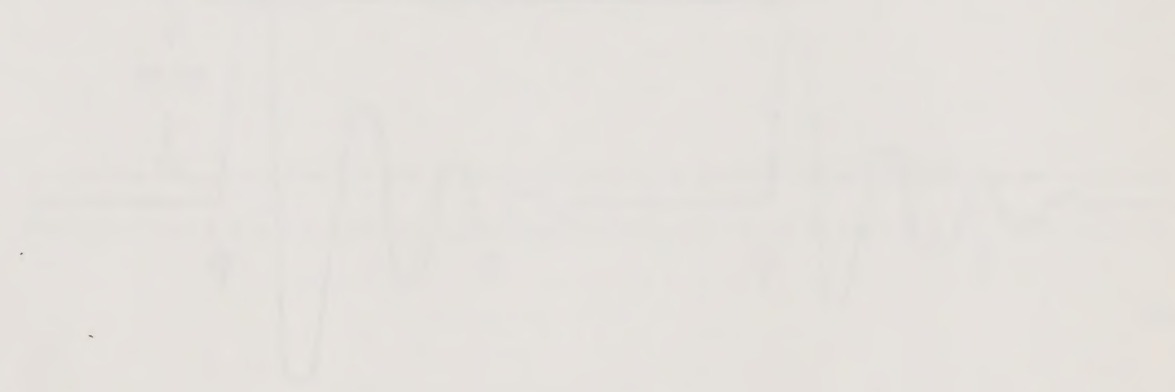


Figure 1-4. Two Principal Types of Impulse Noises
 Note: Taken from Ward³

CITIZEN PARTICIPATION ELEMENT



OTHER FACTORS IN THE



11/10

H

H. CITIZEN PARTICIPATION ELEMENT

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INTRODUCTION

1 The Citizen Participation Element defines policies that will, when
2 implemented, provide the citizens of Berkeley with the widest possibility
3 for full involvement in the planning process as it relates to the
4 development of the City.

5 At the present time, specific procedures for citizen participation
6 in the planning and development review processes are spelled out in the
7 Zoning Ordinance (No. 3018-N.S., as revised), the Subdivision Ordinance
8 (No. 3873-N.S., as revised) and the Master Plan Ordinance No. 3403-N.S.

9 Citizen participation in Berkeley's municipal planning activities
10 consists of more than the steps outlined in the above-mentioned ordinances.
11 Planning occurs in the multiplicity of social and physical development
12 programs sponsored by the City and is directly influenced by citizens
13 through their participation on committees, assistance in the formula-
14 tion of projects and through voicing their views and concerns at public
15 hearings. Information on current activities is also made available to
16 the public through the distribution of minutes, reports and newsletters,
17 and yet, although the present system allows for citizen input at various
18 levels, it often requires an inordinate amount of time and energy by
19 citizens primarily because there are no clear points of entry where a
20 contribution can be made in the planning process. However, this Element
21 does not attempt to provide a mechanism for addressing these numerous
22 opportunities for planning except as related to the implementation of
23 the Master Plan and the activities involved in Master Plan implementation.

BACKGROUND

1 Citizen involvement in land use planning in Berkeley goes back to almost
2 the turn of the century. Through the utilization of planning consultants
3 and citizen committes, Berkeley's earliest civic designs were formulated.
4 The City Council in July 1914 formalized the land use planning function
5 through the creation of one of California's first Planning Commissions
6 Although temporarily superseded by the Civic Art Commission, the Planning
7 Commission returned to Berkeley's municipal scene with the institution
8 of the City Manager form of government in 1923. During this same year, a
9 "Committee of Sixteen" was formed and with the assistance of John Nolen,
10 planning consultant, prepared a ten year improvement plan for the City with
11 the focus being on public works. According to the 1923 report of the City
12 Manager, "The municipal plant was taken over in a seriously depreciated
13 condition. The City's streets, culverts and crosswalks showed every
14 evidence of costly neglect.... Many sewers, improperly or too cheaply
15 constructed, ceased to function and required extensive repairs."

16 The planning function became a recognized part of Berkeley government
17 during the late '20's and that it should be closely tied with citizen
18 participation was appreciated even then. Prof. J. W. Gregg in an early
19 article extolling the virtues of a City Plan for Berkeley states:

20 "A City Plan is a citizen's plan. A City Plan to be a reality
21 in a community should be known and talked about in every home.
22 Everyone, young and old, should be interested in it. A copy of
23 the Plan should hang on the wall in every school and every public
24 building. Each society, club or group should have an active
25 committee on City Planning whose duty it should be to keep fellow
26 members posted on its progress...."
27

BACKGROUND, Cont'd

1 It was during FY 1949-50 that the Planning Department was established
2 in Berkeley with a working budget, a staff and a Director. One of the
3 first major assignments of the Department was the development of a
4 Master Plan. A completed draft of the Plan was made available to the
5 City Council after several years of work by the Planning Commission.
6 The Commission spent nearly a year discussing the draft with citizens
7 and civic groups in all parts of the City. Two public hearings were
8 held by the Commission and another by the City Council prior to adoption
9 of the Master Plan in April 1955. Despite the great involvement of
10 citizens in the preparation of the document, no specific element or
11 section of the Plan related specifically to citizen participation.

12 Many significant decisions during the 1960's and early '70's were made
13 as
14 in large part/a result of close cooperation between the City and active
15 citizens and organizations: downzoning of much of the formerly high-
16 density zoned Flatlands area; undergrounding of the BART system through
17 Berkeley; suspension of the plans to fill the Bay for development pur-
18 poses as proposed by the 1955 Master Plan; implementation of the Model
19 Cities program which gave highest priority during its First and Second
20 Action Years to housing rehabilitation in South Berkeley; both the
21 Federally Assisted Code Enforcement Program and the Community Development
22 Block Grant were also programs with high citizen input that had positive
23 effects on areas of the City, particularly in terms of housing improve-
24 ments.

BACKGROUND, Cont'd

1 In 1973, the Neighborhood Preservation Ordinance (NPO) was passed by
2 the voters and adopted by the City Council calling for, among other things,
3 an updating of the Master Plan, revision of the Zoning Ordinance and the
4 establishment of a new planning process involving a greater degree of
5 citizen involvement in development decisions affecting them. The Master
6 Plan Revision Committee was established to implement the NPO. The Committee
7 made up of 18 citizens selected by the City Council members, responded
8 energetically to the assignment and spent the following two years working
9 closely with neighborhood organizations to develop a set of proposals as
10 the basis for the new Berkeley Master Plan. A unique aspect of the
11 proposals was the recommendation for a separate Neighborhood Participation
12 Element emphasizing the development and implementation of neighborhood
13 plans. The proposal also set forth goals and policies for citizen partici-
14 pation through neighborhood organizations in a process involving planning,
15 budgeting, land use, zoning and community management of projects. All the
16 proposals, in tabloid format, were widely circulated and finally presented
17 to the Planning Commission who held five public hearings in different
18 parts of the City. The Planning Commission in developing the present
19 draft of the Master Plan has also acknowledged the importance of citizen
20 participation policies being clearly set forth in a separate element of
21 the Master Plan.

CURRENT PROCEDURES

24 The following briefly describes what presently occurs in the Berkeley
25 planning process with regards to land use applications.

CURRENT PROCEDURES, Cont'd

1 The Zoning Officer encourages all applicants for land use change permits
2 to discuss their proposals with their immediate neighbors. If the pro-
3 posal is likely to involve some aspect that has a more general significance,
4 the applicant is encouraged to contact community organizations in the area.
5 Additional information is provided on a routine basis to/zoning applicant.
6 A summary list of active neighborhood organizations with names and phone
7 numbers of current officers or contact people, has been prepared in quantity
8 and is distributed to applicants upon their first contact with the Zoning
9 Division of the Comprehensive Planning Department. A map showing the
10 general locale of neighborhood organizations has also been published. Fur-
11 thermore, the Board of Adjustments has adopted a general policy statement
12 encouraging persons presenting applications of general interest or signi-
13 ficance to discuss proposals with affected residents and neighborhood
14 organizations prior to application submittal.

15 However, there are some problem areas worth noting.

16 First, not all neighborhood groups are well organized and it is
17 sometimes difficult to arrange a general meeting of respective organiza-
18 tions because of a time lag between meetings. Many matters may be dis-
19 cussed with only one person or a Board of Directors.

20 Timing is also a problem area, since requirements for substantial
21 changes in the nature or design of a project after the matter reaches the
22 Board of Adjustments is a very questionable practice. Also, in the opinion
23 of the Zoning Division staff, too many applications now require public
24 hearings detracting from the time and effort that might otherwise be devoted
25 to more important applications. The staff reports that they are notifying
26
27

CURRENT PROCEDURES, Cont'd

1 residents in all cases and receiving very low response. In contrast to the
2 relatively poor experience with mailed notices to individuals as a device
3 for eliciting public comment upon applications, notices to community organi-
4 zations has proven far more effective.

5 It is also apparent that certain types of applications are likely to
6 involve wider community interest than others. For example, minor setback
7 adjustments, proposals for accessory buildings, etc. are typically matters
8 of interest only to abutters. By way of contrast, construction of major
9 buildings, proposals for uses of property that are likely to pose opera-
10 tional or other issues do warrant a wider area of notice. As a consequence,
11 it can be concluded that a flexible approach to noticing standards could pro-
12 vide a cost-effective method of assuring that property owners and other
13 affected parties in an area are properly informed of pending zoning applica-
14 tions.

15 Such a new procedure was endorsed in April 1976, by the Planning
16 Commission and submitted to the City Council as a revision of the Zoning
17 Ordinance noticing procedures contained in/19.3 of the Ordinance as follows:

18 -- Regardless of the area to be notified, property owners and
19 occupants would receive notice.

20 -- The minimum initial mailed notice area would include only
21 abutting property owners and occupants unless the Zoning
22 Officer determined that the application was of such a
23 nature to warrant a wider notice area.

CURRENT PROCEDURES, Cont'd

1 -- Where a larger notice area is deemed warranted, such area
2 would include mailed notices to property owners and
3 occupants within 300' on the same street or streets, or
4 within a 300' radius of the subject property, whichever will
5 provide adequate coverage in a given case.

6 -- The Board of Adjustments be also authorized to extend the
7 area of notice when deemed appropriate.

8 -- The Zoning Officer and/or Board of Adjustments be authorized
9 to extend the period of notice from the minimum of ten days
10 to a maximum of thirty days for applications of major
11 significance.

12 -- For public hearings on appeals to the City Council, the City
13 Clerk would notify the same area as that used for the last
14 Board of Adjustments hearing on an application.

15 -- The Zoning Officer would maintain a registry of organizations
16 and would provide mailed notice of public hearings.

17 It is anticipated that additional notification procedures will be
18 included in the revised Zoning Ordinance to conform with Master Plan
19 policies.

20
21 ISSUES

22 There is an expressed need to clarify and improve the process through
23 which citizens participate in the City's decision-making efforts. When the
24 planning process is not known or is unclear, a sense of frustration arises
25 which results in either citizen apathy or mistrust regarding the City's
26
27

ISSUES, Cont'd

activities. When a person or group does manage to successfully influence the process there may be a tendency to continually emphasize a set of goals and objectives which may not reflect the broad spectrum of views prevalent in the community. It is essential, therefore, that an avenue for involvement is available to all interested citizens, as individuals or as members of organizations, which is clearly spelled out and does not require an inordinate amount of time or procedural confusion.

The 1955 Master Plan established twenty-eight neighborhoods as a basis for local planning. One of the important tools in reaching the objectives for maintaining and upgrading residential areas was to be the development of neighborhood plans with the assistance of residents in the involved area. Plans for the San Pablo and West Berkeley areas were eventually produced. The San Pablo Neighborhood Plan has been almost totally implemented, while the West Berkeley Neighborhood Plan is only in the beginning stages.

During the 1960's, the number of neighborhood groups multiplied at a rapid rate so that by the time the NPO was instituted in 1973, there were approximately 60 organizations throughout the City. In formulating their Master Plan proposals, the Master Plan Revision Committee designated 21 study areas based roughly on neighborhood boundaries.

Master Plan

The / Revision staff of the Comprehensive Planning Department acted from July, 1974 to December, 1975. as liaison with various community groups/ Berkeley's 21 study areas had a Community Planning Assistant assigned to each area. These liaisons served to provide linkages between community groups and the Comprehensive Planning Department.

ISSUES, Cont'd

1 This direct linkage served in several ways to provide a mechanism
2 in which community persons and others had an opportunity to say what their
3 future community might look like. Community persons, business operators
4 and property owners participated in the development of Master Plan policies.

5 The MPRC Neighborhood Participation Element was in some respects the
6 natural outgrowth of two years of close collaboration with neighborhood
7 associations in the development of goals and policies. The
8 result was a strong focus on the preparation of neighborhood plans as a
9 method for implementing the Master Plan and one that would give substantial
10 control to neighborhood groups for local planning and decisions on budgeting,
11 land use, zoning, the management of projects and "other policy matters
12 which affect the livability of neighborhoods." The neighborhood plans
13 would be submitted to the Planning Commission and City Council for review and
14 adoption becoming then the official plans for the community. Continuous
15 citizen participation was thought to be essential in order to assure that
16 the planning process remained flexible, responsive and open-minded.

17 However, there is some difficulty with the idea that a Citizen Partici-
18 pation Element should focus entirely on neighborhood organizations. The
19 MPRC's Neighborhood Participation Element recommended expanding the
20 existing Board and Commission system to include a mechanism for local and
21 Citywide neighborhood control of the planning and budgeting processes,
22 zoning and the management of projects. Given that no clear lines of res-
23 ponsibility were drawn up, there was the strong possibility that neighborhood
24 groups would in fact impinge on the authority of the Boards and Commissions
25 in their role as advisors to the Council. Since the purpose of this Citizen
26
27

ISSUES, Cont'd

1 Participation Element is to improve access to the planning process for all
2 Berkeley citizens, methods for improved utilization of the existing decision
3 making structure within City Hall becomes an important first step.

4 A move in this direction was taken in 1975 when an initiative was
5 passed calling for each Councilperson to individually select members of
6 Boards and Commissions. Previously, appointments were made by a Council
7 Committee on Appointments whose recommendations were ratified by a majority
8 of the Council. An important by-product of the new selection procedure is
9 the more diverse views represented on the Boards and Commissions.

10 Rather than emphasizing neighborhood organizations as the focus of
11 citizen participation, the Planning Commission wishes to develop a planning
12 process that is understandable and accessible to all Berkeley residents.
13 Staff had suggested dividing the City into ten study areas for the purpose
14 of defining problems and recommending solutions. However, the Commission
15 believed that the resulting policies tended to be too specific and seemed to
16 lose the City-wide emphasis thought to be essential in a Master Plan document.
17 As a result, the neighborhood perspective per se is not emphasized in this
18 Element. However, none of the policy recommendations preclude or discourage
19 neighborhood organization as one method of influencing both the process and
20 the policy decisions. Although the method does not guard against decisions
21 that could be unpopular with neighborhood groups, it provides the means for
22 moving in directions that are consonant with the best available information
23 and in an overall sense responsive to community sentiments.

ISSUES, Cont'd

1 Over the past few years, the League of Women Voters and A Dream for
2 Berkeley, because of their shared belief that the Board and Commission system
3 is one of the best possible avenues for citizen participation in local
4 government, have presented a series of recommendations to the City Council
5 "that will recognize the value of these citizen Commissions and ways to
6 make their participation more helpful to the Council in its handling of City
7 problems." Many of their suggestions for improving the Commission's
8 effectiveness have been incorporated into this Element's policies.

9 The Community Planning Process Element is not a required element of the
10 California State Planning Law. However, Section 65303 (j) of the Law does
11 state that cities may prepare other elements which in its judgment relate to
12 the physical development of that City. Furthermore, the Neighborhood Pre-
13 servation Ordinance calls for a new planning process to be developed in
14 Berkeley.

15 The basic assumptions underlying the policies are in accord with the 1968
16 Douglas Commission on Urban Problems recommendations, namely that citizens
17 have a right to: 1) a full explanation of information on which public
18 decisions must be made; and 2) a vehicle to express to the decision-makers
19 their reactions to the actions being taken. In sum, that citizens have a
20 right and duty to participate in planning for their own futures.

POLICIES

GOAL

1 TO DEVELOP A PLANNING PROCESS THAT IS SIMPLE, FLEXIBLE, RESPONSIVE AND
2 OPEN-ENDED. IT SHOULD ALLOW AND ENCOURAGE BERKELEY RESIDENTS AND PROPERTY
3 OWNERS TO PARTICIPATE FULLY AND EFFECTIVELY IN PLANNING AND IN IMPLEMENTING
4 PROGRAMS WITHIN THE CONTEXT OF THE CITY'S MASTER PLAN.

5 To achieve this Goal the City Council will:

6 ENCOURAGE THE FULL PARTICIPATION OF INDIVIDUALS AND OF NEIGHBORHOOD ASSO-
7 CIATIONS OR OTHER GROUPS WHICH HAVE BEEN ORGANIZED FOR THE PURPOSE OF CONSIDER-
8 ING AND ACTING UPON A RANGE OF ISSUES AFFECTING THE LIABILITY IN A NEIGHBORHOOD
9 AREA.

POLICIES

PUBLIC PLANNING BODIES

Policy 7.00

13 IMPROVE THE EFFECTIVENESS OF THE PLANNING COMMISSION AND BOARD OF ADJUSTMENTS
14 AS AVENUES FOR CITIZEN PARTICIPATION IN THE PLANNING PROCESS.

15 For the process to work, it is important that citizens have confidence that
16 members of the Boards and Commission are sensitive to their concerns and that
17 there is a process by which they can be heard. Commissioners should have a
18 thorough understanding of their areas of planning responsibility and an orien-
19 tation procedure should be made available to all new members. The City Council
20 will encourage members to make prompt appointments when vacancies occur so as
21 to maintain these bodies at full strength.

Policy 7.01

23 DEVELOP GUIDELINES THAT CLARIFY THE ROLES AND RESPONSIBILITIES OF PLANNING AREA
24 COMMITTEES APPOINTED TO DEVELOP AND PROPOSE NEIGHBORHOOD AREA PLANS.

25 (A preliminary version of the guidelines has been developed by the Commission
26 and is attached at the end of this element for purposes of review during the
27 public hearings on the Master Plan).

POLICIES, Cont'd.

1 In seeking planning assistance from citizens, particularly as members of
2 ad hoc committees, it is important that prospective committee members be clear
3 on what is expected of them and what departmental resources they can utilize.
4 To foster close collaboration between these bodies, at least one Commission mem-
5 ber should be assigned to each ad hoc committee. Committee actions should also
6 be reviewed and acted upon by the Commission on an on-going basis.

7 Policy 7.02

8 DEVELOP AND PUBLISH CLEAR, CONSISTENT AND FAIR PROCEDURES IN DEALING WITH THE
9 PLANNING COMMISSION, BOARD OF ADJUSTEMENTS AND AD HOC COMMITTEES.

10 The root of the planning process shall be based upon the assumption that
11 all citizens have the right of access to a responsible process for initiating
12 projects and expressing to decision makers their opinions regarding public
13 actions under consideration. To implement this policy, clear procedures should
14 describe ways for citizens to communicate their concerns.

15 To increase public awareness of these procedures, a handbook will be pre-
16 pared and distributed describing how citizens can participate in proposing or
17 commenting on planning proposals and in reporting violations of City ordinances
18 and policies. Where appropriate, the Planning Commission should hold informal
19 workshops throughout the City to make the planning process more accessible.

20 Detailed guidelines and procedures consistent with the goals and policies
21 of the Master Plan will be incorporated in the Zoning Ordinance. A description
22 of the process shall contain at least the following steps:

- 23 - Initiation of Request - Who may begin the process?
 - 24 - Power to Grant - Who has authority to grant the request?
 - 25 - Applicant and Fee - Where is application filed and is there a fee?
- 26
27

POLICIES, Cont'd

- 1 - Public Hearing - Does request require a public hearing? Who sets
- 2 the date? Any time limits?
- 3 - Notices - Who is notified of request? Time constraints?
- 4 - Decision/Conditions - Who prepares final decision?
- 5 Can special conditions be attached to request?
- 6 - Appeal Procedure - Application? Fee? Time constraints?
- 7 - Certification by Council - Requires specific Council action?
- 8 - Revocation of Request - Who can stipulate? Time constraints?

Policy 7.03

10 THE PLANNING COMMISSION SHALL COORDINATE, REVIEW AND EVALUATE NEIGHBORHOOD AREA
11 PLANS FOR THE PURPOSE OF ENCOURAGING COOPERATIVE PLANNING, SOLVING MUTUAL PRO-
12 BLEMS AND FACILITATING THE DEVELOPMENT OF PLANS WHICH DO NOT CONFLICT WITH ONE
13 ANOTHER.

14 Commissioners and staff members should maintain on-going liaison with
15 active neighborhood groups.

16 The Planning staff will provide preliminary assistance and advice in the
17 preparation of neighborhood area plans as requested. They would also encourage
18 adjacent neighborhood areas to seek a common solution to mutual problems. For
19 example, if there is a residential/commercial conflict on a strip commercial
20 street which separates two neighborhoods, residents and property owners of both
21 areas should be involved to develop mutually beneficial solutions. Similarly,
22 if a major institutional land use has proposed future expansion, adjacent areas
23 should work in concert on alternative solutions to their joint and particular
24 problems.

POLICIES, Cont'd

1 Policy 7.10

2 ENCOURAGE THE DEVELOPMENT OF NEIGHBORHOOD AREA PLANS

3 Neighborhood area plans may be initiated by both the City or community
4 residents. When initiated by the City, the plan is to include a citizen parti-
5 cipation component that emphasizes close cooperation with citizens and existing
6 organizations in the study area. Any area planning efforts that utilize Compre-
7 hensive Planning Department resources will require authorizations from the
8 Planning Commission and City Council.

9 Policy 7.1110 DEVELOP NEIGHBORHOOD AREA PLANS WHICH ARE CONSISTENT WITH CITYWIDE GOALS,
11 POLICIES AND OBJECTIVES

12 Berkeley has many readily identifiable community areas with residents who
13 have a very close and fond affection for them. Yet Berkeley residents are also
14 aware of and concerned about what happens in other areas of the City. There-
15 fore, each neighborhood area plan should be developed within the framework of
16 established citywide goals, policies and objectives--becoming thereby a more
17 specific version of the Master Plan. In the event the Council proposes to
18 approve a neighborhood area plan that is in conflict with portions of the
19 adopted Master Plan, that action shall be preceded by an amendment to the Master
20 Plan.

21 Policy 7.1222 INSURE THAT THE VARIETY OF VIEWS WITHIN AN AREA ARE TAKEN INTO CONSIDERATION
23 IN THE PREPARATION OF THE NEIGHBORHOOD AREA PLAN

24 In formulating neighborhood area plans, the various concerns of all who
25 are affected - residents, property owners, business licensees and non-profit
26
27

POLICIES, Cont'd

1 organizations, etc. - should be recognized. In addition, neighborhood organiza-
2 tions within a planning area should provide leadership in the preparation of
3 plans and action proposals and insure representation of the various interests
4 in that neighborhood.

Policy 7.13

6 INCLUDE IN NEIGHBORHOOD AREA PLANS OBJECTIVES, GUIDELINES, PROCEDURES FOR REVIEW
7 AND REVISION AND ACTION PROPOSALS ON MATTERS WHICH AFFECT THE LIVABILITY OF THE
8 NEIGHBORHOOD AREA SUCH AS LAND USE, HOUSING, COMMUNITY FACILITIES AND SERVICES,
9 OPEN SPACE AND PARKS, TRAFFIC AND TRANSIT.

10 These categories do not include all Master Plan categories. Such Elements
11 as Seismic Safety and Noise are more properly dealt with on a citywide scale.
12 To the extent possible, the subject matter of the neighborhood planning documen-
13 tation should be the same as, but in more detail than, those elements which
14 have been developed for the citywide plan. Feasible action proposals to carry
15 out desired objectives having widespread support in the neighborhood should
16 also be developed. Where feasible, residents will be encouraged to work direct-
17 ly on projects to implement the plan.

Policy 7.14

19 SUBMIT NEIGHBORHOOD AREA PLANS TO THE PLANNING COMMISSION AND THE CITY COUNCIL
20 FOR REVIEW AND ADOPTION

21 Once adopted by the City Council the neighborhood area plan becomes the
22 official plan for that neighborhood area. The neighborhood area plans should
23 augment the citywide Master Plan. They are a more specific version of the
24 citywide plan and should not be in conflict with that Plan. During the plan-
25 ning process, the Planning Committee can identify problems and issues that may
26
27

POLICIES, Cont'd

lead to amendment of the citywide Master Plan. Continued citizen participation is essential to assure that the neighborhood area planning process remains flexible, responsive and open-ended. The plan should be updated, as necessary, to reflect the changing needs of the neighborhood area.

NEIGHBORHOOD LAND USE AND ZONING PROCESS

Policy 7.20

INCLUDE IN THE ZONING ORDINANCE CLEAR PROCEDURES FOR SUBMITTING PROPOSALS FOR NEIGHBORHOOD REVIEW OF SIGNIFICANT LAND USE CHANGES WITHIN THE NEIGHBORHOOD; SUBMIT SIGNIFICANT PLANS, POLICIES, USE PERMITS, VARIANCES RELATED TO LAND USE AND ZONING CHANGES WITHIN A NEIGHBORHOOD AREA TO THE NEIGHBORHOOD FOR REVIEW AND RECOMMENDATIONS BEFORE FINAL DECISIONS ARE MADE BY THE APPROPRIATE CITY BOARD, COMMISSION OR CITY COUNCIL: DETERMINE THAT PROPOSED LAND USE AND ZONING CHANGES AFFECTING A SPECIFIC NEIGHBORHOOD ARE CONSISTENT WITH THE OFFICIALLY ADOPTED NEIGHBORHOOD AREA PLAN

A referral process will help people deal with local issues and be heard. In the Zoning Ordinance, the notification procedures should establish criteria for deciding on any given issue what residents and groups will be notified, how far in advance notification will be sent, how additional copies of notices can be obtained, various methods by which an individual or group can offer comment or obtain additional information. Thirty days will be allowed for review of proposals subject to a public hearing. All opinions received by the Planning Commission or Board of Adjustments are advisory.

The Planning Commission or Board of Adjustments will broaden notification beyond the neighborhood area if it determines the significance of the proposal so warrants. A criteria for approval of Use Permits will be consistent with an adopted Neighborhood Area Plan.

POLICIES, Cont'd

Policy 7.21

INCLUDE NEIGHBORHOOD ORGANIZATIONS IN NOTIFICATION PROCEDURES

The City should encourage the development of neighborhood organizations as an important link in the City's efforts to elicit comment on land use related planning issues. In addition to legal notice, organizations will be encouraged to distribute notices of proposals throughout their neighborhood area. To keep the City's list of organizations current, groups will be asked to register annually and indicate the geographic area they represent, their concerns and to whom information should be sent. All groups will be registered upon request.

NEIGHBORHOOD BUDGETING PROCESS

Policy 7.30

INCLUDE IMPLEMENTATION AND BUDGET PRIORITIES IN NEIGHBORHOOD AREA PLANS.

A neighborhood area plan, program and budget provides citizens' judgments concerning how limited resources can best be spent within the neighborhood planning area. While authority for final budgetary deliberations lies with the City Council, the neighborhood area plan will provide essential information on citizen priorities that will improve the quality of program and budget decision-making.

Policy 7.31

ALLOCATE CITY FUNDS IN AN AREA WITH AN ADOPTED PLAN TO REFLECT THE PRIORITIES OF THE NEIGHBORHOOD AREA PLAN

Cost estimates and priorities for implementing the Neighborhood area plan are to be established to assure that neighborhood considerations be weighed by the City Manager and City Council in budget deliberations.

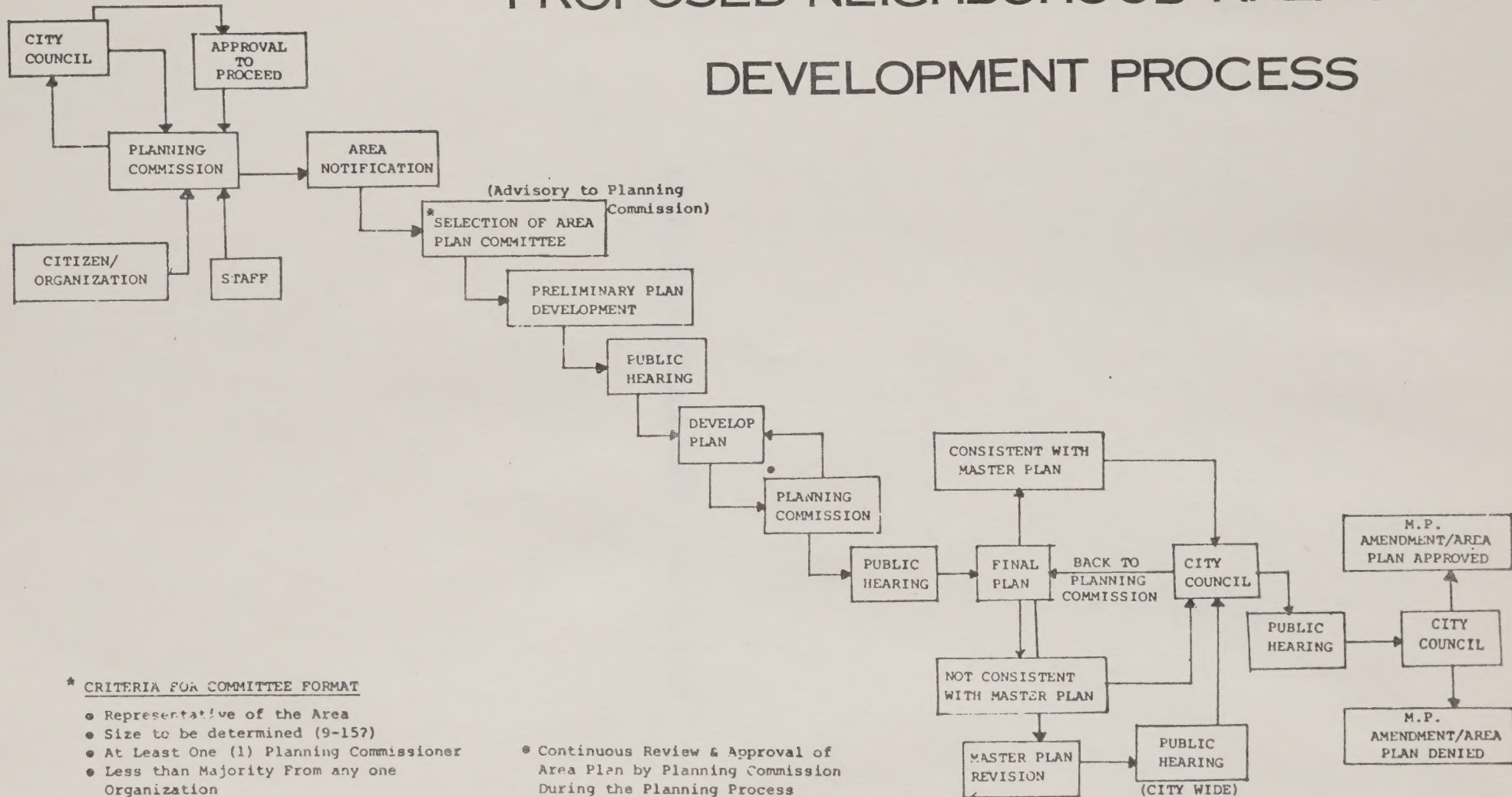
PROPOSED NEIGHBORHOOD AREA PLAN (NA PLAN) DEVELOPMENT PROCESS

1. NA Plan request can be initiated by the City Council, Planning Commission, community residents or staff.
2. NA Plan proposals are to be processed through the Comprehensive Planning Department for Planning Commission review and recommendation to the City Council.
3. NA Plan proposals approved for development by the City Council are to provide for budget requirements of Comprehensive Planning Department involvement.
4. Planning Commission will notify area residents that an NA Plan is being prepared and will solicit volunteers to serve on an NA Plan Committee (NAPC) who will be advisory to the Planning Commission. Members will be appointed by the Planning Commission.
5. Criteria for Committee formation:
 - Represent fairly those persons and interests that will be affected by the Plan
 - Size of Committee to be determined (9-15)
 - At least one (1) Planning Commissioner as member
6. After NAPC is formed it will develop preliminary NA Plan guidelines, define problems, goals and policies and specific development proposals, as appropriate.
7. The Planning Commission will hold a public hearing within area to discuss preliminary Plan guidelines.
8. The NAPC will develop an NA Plan based on public hearing input. As each element of the Plan is prepared and approved by the NAPC, it is to be submitted to the Planning Commission for review and approval. Results in NA Plan to be mutually developed by the two bodies with costs of implementation estimated.
9. Planning Commission holds public hearing on proposed NA Plan and makes modifications if required. The Planning Commission determines extent of appropriate

notice. Notice should go to individuals as well as neighborhood groups and residents. If the Planning Commission finds that the NA Plan would have city-wide significance, notice will be sent to neighborhood groups throughout the city and to city-wide groups.

10. Determination is made if NA Plan is consistent with the approved Master Plan. If consistent, Planning Commission forwards the NA Plan to the City Council for their review and a public hearing. Council adoption of Plan to include necessary actions to meet the costs of implementation.
11. If the NA Plan is not consistent with the Master Plan, the Planning Commission, if it still approves Plan, transmits it to the City Council for a preliminary review and approval and the City Council sends the Area Plan back to the Planning Commission for processing an amendment to the Master Plan.
12. City Council either approves or denies the Master Plan amendment and Area Plan.

PROPOSED NEIGHBORHOOD AREA PLAN DEVELOPMENT PROCESS



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ЭРХЭЭР ТЭМЦЭГЭЛЭЭ



IMPLEMENTATION SECTION

I. IMPLEMENTATION SECTION

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- Five Year Comprehensive Review	

- Annual Report
- Five Year Summary

IMPLEMENTATION SECTION

1 INTRODUCTION

2 The purpose of the Master Plan is to guide public and private decisions
3 affecting Berkeley's development and character. The Plan expresses Berkeley's
4 current policies for future development, both short and long range. Each
5 and every day activities are occurring (and not occurring) which affect the
6 achievement of Berkeley's Master Plan goals and policies. The City Council,
7 however, is a primary user of the Plan since its decisions will both directly
8 implement Plan proposals and will provide the framework for others to act in
9 accordance with the Plan through regulatory devices and other activities.

10 The Plan is a "today" plan--indicating the current intent of the City. Its
11 goals are the ideals toward which the City will be constantly striving. Its
12 policies describe activities to be undertaken, standards to be adhered to, cri-
13 teria for establishing priorities and specific results to be achieved. All of
14 these will be reviewed periodically to identify which policies have been rea-
15 lized, what changes may be needed and what additional policies are appropriate.

16 There are two basic implementation processes. The first is conformance
17 with the standards and policies of the Plan. By adhering to these policies in
18 executing public and private actions, the Plan is realized in an incremental
19 manner.

20 The second process is affirmative action by individuals and groups,
21 public and private. Most direct impact is achieved through projects under-
22 taken by the City. Projects include development and enforcement of ordinances,
23 capital improvements, provision of city services and coordination of special
24 projects such as the Sava Island Redevelopment Plan.

25 Following adoption of the Master Plan, the Planning Commission will
26
27

INTRODUCTION, Cont'd

1 submit to the City Council its recommended "Agenda for Action". This
2 Agenda will provide a recapitulation of concrete proposals in the Master Plan
3 that are needed if the Plan is to be realized. Priorities will be suggested.
4 Initial actions will be recommended.

ASSUMPTIONS

6 Underlying Plan implementation are four basic assumptions.

7 1. Most of the Plan is already here.

8 As a developed community, Berkeley has a high level of community resources
9 parks, homes, transportation services, public facilities and ordinances which
10 reflect the concerns and desires of its citizens. While the Plan addresses
11 some areas requiring new effort and programs, much of its emphasis is rightfully
12 upon maintaining and improving upon that which has already been achieved.

13 2. The Plan is consistent with community aspirations.

14 Berkeley's Master Plan will be realized only to the extent that it accurately
15 expresses community values. The diversity of Berkeley's population has
16 made development of this common statement of purpose difficult. Lively debate
17 among specific alternative methods for implementing the Plan's policies will
18 continue. The assumption is made, however, that beneath divergent opinions on
19 specific issues there are common values among Berkeley citizens which the
20 Master Plan expresses and which citizens will support.

21 3. The Plan will be supplemented with detailed actions plans and programs

22 The Plan provides the policy framework for actions, public and private.
23 The initiation and completion of actions, however, will require more detailed
24 planning. For example, Berkeley is at present completing preparation of a five
25 year plan for park acquisition and improvement funded by property tax assess-
26

ASSUMPTIONS, Cont'd

ments. The University is involved in extensive planning for a potential intramural sports facility. An economic development plan for a commercial area will be prepared in the coming year. The nature of specific plans will be as varied as the purposes they address but will have the common feature of implementing Master Plan policies.

4. There will be a continuity of effort from private individuals, businesses, non-profit organizations and government at all levels.

The continuing investment of money and individual effort are the foundation of Plan implementation. Inflation and high unemployment are among the factors reducing the ability of the public and private sectors to meet many needs identified in the Plan. If the Plan is to be realized, a long term commitment to its policies will be required as well as coordination and cooperation to realize the greatest benefits from limited public and private resources.

ISSUES

Limited Resources

At present, a large gap exists between the resources available and those needed for plan implementation. Government revenues from federal, state and local sources are not increasing as rapidly as the costs of operating the City. New social services are adding to the competition for funds among traditional services and capital improvements. Federal assistance is shifting from special programs to block grants which give Berkeley increased flexibility in their use. The extent of this assistance is likely to decrease, however, in the years ahead. Funds for routine services such as street maintenance have been severely cut back. Berkeley eliminated an established capital improvement program funded from property taxes some years ago. Inflation causes the cost for existing services to increase annually. Difficult decisions will continue to be required.

PLAN REVISION PROCESS, Cont'd

1 but changing circumstances will, nonetheless, mandate Plan revision from time
2 to time. To accomodate such changes an orderly procedure is necessary.

3 Annual Re-certification

4 In the first quarter of each fiscal year the Planning Commission will
5 review progress on Plan implementation and prepare any revisions it consi-
6 ders appropriate. These recommended revisions as well as any revisions
7 recommended by others will be the subject of a public hearing. Based upon
8 this public hearing the Planning Commission will review all proposed revisions
9 and submit its recommendations to the City Council. The City Council, upon
10 review of the recommendations of the Planning Commission, will either (a) re-
11 certify the Plan in its existing form or (b) schedule a public hearing on
12 the recommended revisions. After the hearing, the Council will evaluate the
13 recommended revisions and testimony received and adopt those revision (if any)
14 the City Council finds appropriate.

15 Following City Council action, the Planning Commission will prepare a
16 revised "Agenda for Action" reflecting the accomplishments of the previous
17 year and revisions to the Plan.

18 Five Year Comprehensive Review

19 Every five years the re-certification process will be expanded to include
20 preparation of a comprehensive evaluation of the Master Plan. Major revisions
21 or additions will be considered at these times. Expanded participation from
22 Boards and Commissions, community organizations, the University and other insti-
23 tutions, the business community and interested citizens will be solicited.

24 Utilizing this annual re-certification procedure and five year comprehen-
25 sive review process, the Plan can be maintained and up-dated to meet change and
26 unforeseen issues and opportunities.
27

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